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MEDICAL MANAGEMENT OF BLEEDING GASTRIC AND DUODENAL ULCER

C. GRAHAM REID, M. D.
CHARLOTTE

Hemorrhage is the most common complication of peptic ulcer. The management of hemorrhage of gastroduodenal origin, therefore, is a problem which is always with us. In the treatment of massive gastro-intestinal hemorrhage there have been so many "voices crying in the wilderness" that the "straight path" has been indeed difficult to recognize. In reviewing the literature of the earlier therapeutic efforts directed against gastroduodenal bleeding, the reader is struck with the intense controversy existing over the treatment of choice, and is gradually forced to concede that frequently a new form of therapy has but enabled the physician to obtain the previous unsatisfactory results by a greater variety of methods.

The chief purpose of this presentation is to call attention to the more recent trends in the management of the bleeding ulcer and to suggest that the slowly falling mortality rate and the crystallization of opinion around a few fundamental concepts in this problem herald a more satisfactory management of these cases^(1, 2).

The older method of therapy in gastroduodenal bleeding was a period of starvation, morphine and immobilization, varying from forty-eight to sixty hours, in which

even oral fluids were withheld. Following this period of starvation various anti-acid mixtures were used, together with the cautious administration of milk and cream. Upon this regimen, widely known as the Sippy program, the patient was ushered in upon a period of exhaustion and apprehension which was promoted and maintained by thirst, hunger and immobilization. This method of treatment gave an average mortality rate for 5843 cases⁽³⁾ of 8.7 per cent, while in some individual reports the mortality ran as high as 26 per cent. These figures clearly demonstrate that this program of therapy left much to be desired. If surgery was employed, the mortality figures were even higher; 383 cases⁽³⁾ submitted to surgery gave a mortality of 28 per cent.

Andresen⁽⁴⁾ in 1927 criticized the starvation regimen as being unphysiologic, and recommended prompt and adequate feeding. He presented no figures to substantiate his concept, and unfortunately it gained few converts. Meulengracht⁽⁵⁾ in 1933 observed, as had Andresen before him, that regardless of how scrupulously the starvation program was adhered to, many patients died on the fifth or sixth day even though their bleeding had stopped. He also recognized that many ambulatory patients who remained at home and ate as they chose did well. In short, he

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

1. Chasoff, Julius, et al.: An Evaluation of the Meulengracht Regimen in the Treatment of Bleeding Peptic Ulcer, *Am. J. Digest. Dis.* 7:373, (September) 1940.
2. Finsterer, H.: Operative Treatment of Severe Gastric Hemorrhage of Ulcer Origin, *Lancet*, 2:303 (August 8) 1936.

3. Miller, T. G. and Elsom, K. A.: The Management of Massive Hemorrhage From Peptic Ulcer, *M. Clin. North America*, 22:1711, 1939.
4. Andresen, A. F. R.: The Treatment of Gastric Hemorrhage, *J. A. M. A.* 89:1397 (October 22) 1927.
5. Meulengracht E.: Treatment of Hematemesis and Melena, *Proc. 16th Scandinavian Congress for Internal Med.* 1933. *Arch. Med. Scandiv. Supp.* 59:35, 1934.

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felt that the Sippy regimen, with its resulting nutritional and vitamin deficiency states and its potential danger of alkalosis, did little or nothing to correct the physiologic changes produced by a massive hemorrhage. He, therefore, advocated a prompt feeding program beginning from the onset of the hemorrhage and giving the patient six feedings a day, along with alkalis, and iron. Meulengracht's program embodies one of the fundamental principles in the treatment of disease—namely, placing as nearly as possible at complete rest the diseased or impaired tissue. To this end we immobilize the fracture, we subject the tuberculous lung to pneumothorax. However, until recently this fundamental concept had been completely ignored in the treatment of gastric and duodenal bleeding. Starvation had been the order of the day, even though Carlson⁽⁶⁾ in 1916 and other clinicians since have conclusively demonstrated that the empty stomach is in frequent rhythmic contractions, while the full stomach is relatively inactive.

A review of the literature as reported by Nicholson⁽⁷⁾ shows that a mortality rate of approximately 3 per cent has been obtained in 1500 cases of massive hemorrhage from ulcers which were treated by prompt and adequate feedings.

A comparison of the available mortality figures of the older regimen and the more recent feeding programs would appear on the surface to be decidedly favorable to the newer form of therapy. However, it is, in my opinion, yet too soon to draw any iron-clad conclusions. The statistics concerning the treatment of bleeding ulcer have always been confusing. One author reports a 26 per cent mortality, another a 3 per cent mortality, under the same method of treatment. Obviously, they are not dealing with the same type of hemorrhage. Before the mortality tables can be relied upon too implicitly the age factor of the patients being reported must be considered. A massive hemorrhage in the young does not carry with it the same prognosis as a hemorrhage of the same degree in an elderly person. The number of hemorrhages the patient has had is also significant. While fatal hemorrhage may occur in the first bleeding episode, death is more common in persons who have had

previous hemorrhage. Of course the degree of hemorrhage is important, but as yet we have no definite standards as to what constitutes a massive hemorrhage. What to one author may be "severe" is perhaps to another a moderate hemorrhage. Therefore I caution you to accept with some reservation the contention of those who would lead us to believe that the feeding program in bleeding ulcer has brought about a reduction in mortality comparable to the reduction in the mortality rate of pneumonia under sulfathiazole therapy.

This much, however, can be said: the patient on a modified Meulengracht diet is certainly more comfortable, more cheerful and easier to handle than a patient on a starvation program. Numerous patients who have previously been treated by the Sippy method, when they are put on a modified Andresen program voluntarily comment upon the comfort and ease of this latter regimen. Of course, in evaluating any form of therapy the comfort of the patient is not the prime consideration. It is, however, a factor. Therefore, it is safe to say that as the mortality in bleeding ulcer with the feeding program is certainly no worse and is perhaps better than that obtained with a starvation regimen, and since all agree that the former method is a less arduous and depressing experience for the patient, the giving of adequate food is at the present time the treatment of choice.

The patient upon entering the hospital (and all patients with significant gastrointestinal bleeding should be hospitalized) should be given absolute bed rest. An adequate history and physical examination should be obtained whenever possible. After these preliminary steps, nembutal in the form of a suppository should be given until the patient is definitely drowsy. However, he should respond to moderate stimuli so that he may continue his frequent feedings. In my opinion nembutal is superior to morphine or its allied substitutes. In the first place, morphine will produce or prolong vomiting in a significant number of patients, while nembutal does so rarely, if ever. Second, Abbott⁽⁸⁾ has shown that while morphine produces a temporary increase in the

6. Carlson, A. J.; Lebensoh, J. E.; and Pearlman, S. J.: Has Secretin a Therapeutic Value? *J. A. M. A.* 66:178 (January) 1916.

7. Nicholson, J. T. L.: Ready for publication.

8. Abbott, W. O., and Pendergrass, E. P.: Intubation Studies of the Human Small Intestine: V. The Motor Effects of Single Clinical Doses of Morphine Sulphate in Normal Subjects, *Am. J. Roentgenol.* 35:289 (March) 1936.

tonus of the small bowel, this is followed by a prolonged period of abnormal relaxation, which theoretically is not conducive to hemostasis. Unless the indications for its use continue, nembatal should be stopped by the second or third day.

Feedings are begun as soon as possible after the patient enters the hospital. The fact that the patient is nauseated is not a contraindication to the administration of food. Indeed, it is not uncommon for a patient who has been vomiting repeatedly to cease vomiting after feedings have been begun. There is an occasional patient who will vomit every time he is fed, and in such cases it is folly to continue the use of food. I have not used the full Meulengracht program in private practice, as it appears to me that this diet uses some foods during the *acute* phase of an ulcer which would not be used in the treatment of an ordinary ulcer. I have found a modification of Andresen's program very satisfactory. It begins with a bland, non-irritating type of diet, high in proteins and at the same time maintaining adequate caloric intake. This is gradually stepped up to a full ulcer diet on the eighth or ninth day. The exact type of food given is less important in my opinion than that food *be given*. Water is allowed in small quantities as desired. I have not felt that the use of snake venom or other so-called hemostatic agents is worth while.

The question of whether or not these patients should be given transfusions has never been definitely settled. Recently the pendulum has swung toward the more frequent use of transfusions. However, hemorrhage is not in itself an indication for giving blood, and unless shock occurs it is unwise to give transfusions for at least sixty or seventy-two hours after bleeding has stopped. After this period, small transfusions may shorten the period of convalescence. Plasma may be safely substituted for blood with equally salutary results if shock occurs, as it is restoration of circulating blood volume rather than red cells which is important in post-hemorrhagic shock.

The use of anti-spasmodics as a routine measure is not necessary. However, if there is an unusual amount of abdominal discomfort, anti-spasmodics such as atropine sulfate solution 1:1000 may be resorted to. Also the use of anti-acid powders is not necessary, as the gastric acidity is well controlled

by feedings. If, however, an anti-acid is indicated, insoluble preparations such as magnesium trisilicate should be used. The use of the old soda bicarbonate mixtures may be a factor in the disturbed chemical condition of the patient.

In the management of these bleeding cases the question as to the advisability of surgery frequently arises. The best surgical opinion is that surgery should be reserved for those cases where there is clear-cut medical failure or for cases with associated complications which in themselves are definite surgical indications. There are undoubtedly cases in which surgery is indicated, but it is difficult, if not impossible, to select these cases during the first forty-eight hours—which period is universally conceded to be the optimum time for surgical attack. The individual doctor's attitude toward surgery in these cases will depend somewhat upon his philosophy toward surgery in general.

A continuous drip of aluminum hydroxide is advocated by Woldman⁹ in the management of upper gastro-intestinal bleeding. His contentions are that aluminum hydroxide promotes hemostasis and gives a continuous neutralization of the gastric acids. However, as his own mortality figures are no better than those with other newer forms of therapy, I see little advantage in subjecting the patient to the discomfort of an indwelling catheter. The mechanical difficulties in keeping the aluminum hydroxide from occluding the lumen of the tube are considerable. The second disadvantage of such therapy is that aluminum hydroxide is constipating, and I have seen many fecal impactions occur during its use. The use of ascorbic acid in some form is important, as many investigators have shown that the majority of bleeding ulcer patients are deficient in vitamin C.

The management of massive gastro-intestinal hemorrhage of necessity requires much individualization. Mortality figures are reduced in direct proportion to the amount of attention paid to the patient. An author recently claimed to have reduced the mortality figures in his hospital from 26 per cent to 6 per cent by using a feeding program. In my opinion a 26 per cent mortality rate is too high for any program.

9. Woldman, E. E.: The Treatment of Massive Gastro-Duodenal Hemorrhage by the Continuous Administration of Colloidal Aluminium Hydroxide, *Am. J. Digest. Dis.* 8:39 (February) 1941.

Could it be that the apparent reduction in his mortality rate was due as much to the increased interest of the physicians, and consequent increased attention to the patient, as to his change to a feeding program?

No form of therapy should be considered complete until an effort is made to insure the patient against hemorrhage in the future. To this end it is important that long before the patient leaves the hospital a program of re-education should be begun. The ulcer patient should be urged to realize that he must change his philosophy of life; that "business as usual" must give way to "business and pleasure" within his emotional and physical capacity. He should have adequate chance to appreciate that the price of security is vigilance and sacrifice; and that just as surely as pulmonary tuberculosis forces upon its victims certain reductions in activity, so does duodenal ulcer, if it is to be successfully managed.

Abstract of Discussion

Dr. Walter R. Johnson (Asheville): Ordinarily in the discussion of a medical paper, I like controversy. I think every one learns more by such a discussion. Unfortunately, I can't take issue with Dr. Reid in any of the points that he made. I agree wholeheartedly with his management of bleeding peptic ulcers. His program is almost identical with the one I use.

I believe that frequent small feedings are indicated. I believe that nembutal is far superior to morphine derivatives. I do use anti-acid mixtures with milk and cream diet.

Since I can't disagree with him, I'd like to reiterate a few points. First of all, if you read statistics carefully, you will find that death from bleeding ulcer is exceedingly uncommon in patients of less than 45 or 50 years of age, regardless of the type of treatment—that is, unless surgery is employed. It is in patients who are getting into the fifth decade that the mortality becomes significant. As we grow older there is a stiffening in the blood vessels and it is impossible for the arteries to function as usual. They do not retract and the patient may bleed to death. What should you do in such a case? If you have the services of a master gastric surgeon, it may be possible to decide after twenty-four hours that the patient will bleed to death unless he is operated on, and you may save his life with surgery. However, most of us are forced to adopt a conservative point of view, even in these old people. The majority of them, even in the fifth and sixth decades, will survive. Then, after they recover from the hemorrhage, they can be subjected to a large scale gastric resection, together with resection of the ulcer portion of the duodenum. After an interval of good health, they will probably survive such an operation, but if it is performed within two or three days after the hemorrhage, the mortality is very close to 100 per cent unless the work is done by an acknowledged master.

So I think that all of us are forced to adopt the program that Dr. Reid has so clearly outlined.

Dr. J. S. Brown, Jr. (Hendersonville): I want to compliment both of the gentlemen on their discussions of bleeding ulcers.

I would like to know if Dr. Reid thinks internal hemostasis is worth anything?

I also want to protest against his remarks about Sippy's "starvation treatment". I never heard of anybody's starving to death on a half pint of milk every two hours.

Dr. Elias Faison (Charlotte): I would like to ask Dr. Reid whether he gives vitamin K if the prothrombin is low.

Dr. Royster: I would like to ask Dr. Reid if he uses an ice cap.

Dr. H. C. Taylor (Charlotte): I would like to hear some more comment as to when an x-ray should be made. Sometimes it is difficult to decide just when to make the picture.

Dr. Mitchell: I would like to know how to differentiate in the treatment of marginal gastric ulcers and duodenal ulcers.

Dr. Reid: Mr. Chairman, I want to thank the gentlemen very much for their remarks.

Dr. Johnson brought up the question of surgery. We have been so drastic in our accusations against surgeons here this afternoon that I think something should be said in their favor. With reference to bleeding ulcers, I think that, if a hemorrhage occurs several times the question of surgery should be very carefully considered, particularly when a patient has reached the age of 45 or 50.

Dr. Brown spoke about calcium and other hemostatic types of medication. I have never thought they were worth anything at all. At autopsy of a case that has come to a fatal termination, it is difficult to see how any medication could possibly stop the bleeding. Frequently there is a tremendous artery in the central part of the ulceration, and I am sure that no calcium or any hemostatic agent could be effective.

As to Dr. Faison's question concerning prothrombin as a routine, I don't make any routine prothrombin level determination unless there is some evidence of liver damage or biliary disease.

I don't think ice on the external part of the abdomen would have any effect on the bleeding. I don't believe the local change in temperature would get to the gastric wall.

In answer to Dr. Taylor's question as to when x-ray studies should be made: As a general rule there is no need for particular haste in x-raying a patient who has had an upper gastro-intestinal hemorrhage. X-ray studies immediately following a hemorrhage will frequently not give any additional information, as the ulcer crater is often obliterated by the blood clot. If the patient continues to bleed and surgery is being considered x-ray may be helpful in making a differential diagnosis. Even if you suspect a malignancy of the stomach, immediate x-ray is not necessary as you will probably defer surgery in any case until the patient has recovered from the immediate effects of his hemorrhage. If the history of the case suggests lesions such as esophageal varicosities of course x-ray studies are helpful. I usually wait three weeks to make x-rays unless there are indications for earlier studies.

Dr. Mitchell asked about the difference in treatment between a marginal and duodenal ulcer. Surgery in the marginal ulcer case may play a more prominent role, but there is little difference in medical management. I feel both alike. Of course I do not believe the feedings actually arrest the hemorrhage. Giving of food simply keeps the patient in the best physiologic state to combat the effect of hemorrhage and avoids deficiency states.

CESAREAN SECTION: ITS INCIDENCE AND FETAL MORTALITY IN SOME CITIES IN NORTH CAROLINA

CHARLES HAMPTON MAUZY, M. D.

WINSTON-SALEM

Cesarean section has been the means of salvaging many lives since Sanger in 1882 urged a rapid operation with sutures of the uterine incision under antiseptic precautions. Advance has been made not only in asepsis and anesthesia, but also in surgical technique. The low cervical operation, or laparotrachelotomy, popularized by DeLee, is now the operation of choice by most obstetricians whenever the conditions are suitable. For the contaminated cases the Latzko extraperitoneal operation, or the more recent Waters supravescical extraperitoneal cesarean section⁽¹⁾ are the procedures of choice.

It is often the case in medicine that whenever a procedure becomes fairly safe there is a tendency to overstep the bounds of indications and apply the procedure indiscriminately. It is true that under ideal conditions, with an experienced operator, the mortality for elective sections, according to Schumann⁽²⁾ is less than 1 per cent, and is comparable to the death rate in interval appendectomies and other simple intraperitoneal operations; however, the operation is still not a procedure of convenience, nor a method to avoid delivery from below. Schumann's incidence of cesarean section is 1.6 per cent of all deliveries⁽²⁾.

It was with the thought that some communities and even some doctors have become cesarean section conscious that this study was made. I will try to point out why the incidence in certain cities is so great, and also to show that while the operation may be safe for the mother, it does not guarantee a living child, as one might have been led to believe. This study also shows that we in North Carolina have not achieved a mortality as low as 1 per cent.

Table 1 is taken from the Duke Endowment report for the Hospital Section of North and South Carolina. The 1927 report

	1927		1937	
	58 Hospitals		119 Hospitals	
Deliveries . . .	5,170		17,052	
Sections . . .	290	5.6%	897	5.2%
Mat. Mort. . .	26	8.9%	40	4.5%
Inf. Mort. . .	47	16.0%	167	19.0%
Stillbirths . .	32	11.0%	90	10.0%

Table 1. Duke Endowment Report of the Hospital Section of North and South Carolina.

covers only fifty-eight hospitals, and the 1937 report covers one hundred and nineteen hospitals. The incidence of cesarean section has remained about the same, and the maternal mortality has been reduced by half. The lowered figure may be attributed to improvement in facilities, asepsis, technique, and judgment. It is important to note, however, that the fetal mortality, even with these improvements, has remained about the same.

Arnold, making a study of thirty authors⁽³⁾, showed that the national incidence of cesarean section from 1931 to 1939 was 2.5 per cent of all deliveries, with a maternal mortality of 4.6 per cent and a fetal mortality of 8.8 per cent. In this state we are doing twice that number of cesareans and getting twice the fetal mortality.

Table 2 shows the incidence of cesarean section in the larger cities of North Carolina. The number of deliveries represents all the hospital deliveries in each city. A comparison for 1938 and 1939 is given, because it is possible that a high incidence for one year might be an accidental finding.

YEAR	Number of Deliveries		Number of Sections		Percent of Sections	
	1938	1939	1938	1939	1938	1939
Asheville . . .	663	643	36	32	5.4	4.9
Charlotte . . .	1581	1741	60	52	3.7	2.9
Durham . . .	1258	1342	57	34	4.5	2.5
Greensboro . . .	565	614	54	54	9.5	8.7
High Point . . .	270	6346	11	8	4.1	2.3
Raleigh . . .	733	829	26	36	3.5	4.3
Wilmington . . .	958	1052	31	37	3.2	3.5
Winston-Salem . . .	1083	1289	67	97	6.2	7.4
TOTAL . . .	7111	7865	342	350	4.8	4.4

Table 2. Incidence of cesarean section in North Carolina.

I wish to call attention to the high rate of cesarean sections in Greensboro and Winston-Salem. The two cities together account for more than one third of all the cesarean operations in the state, whereas their total deliveries represent less than one fourth the state total. What accounts for this large percentage?

Dunn, reviewing the incidence of cesarean

Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.

1. Waters, E. G.: Supravescical Extraperitoneal Cesarean Section: Presentation of a New Technique, *Am. J. Obst. and Gynec.* 39:423 (March) 1940.

2. Schumann, E. A.: Critique of Factors Involved in Cesarean Section Mortality, *Am. J. Obst. and Gynec.* 37:212 (February) 1939.

3. Arnold, Lawrence E.: Cesarean Section: Comparative Study, *Am. J. Obst. and Gynec.* 40:603 (October) 1940.

section in Greensboro for the years 1935-1938⁽⁴⁾, found it to be 11.6 per cent. He felt that this was extremely high. The indications were many and varied and included a dead fetus.

I reviewed the chart of every cesarean section case in Winston-Salem for 1938 and 1939. The indications for section ranged from low blood pressure to tumor of the larynx. Contracted pelvis, with no measurements recorded, headed the list, as usual; but it was surprising how often there was the history of a previous normal delivery of a child weighing more than the baby delivered by cesarean section.

The surgeons in Greensboro have been blamed by some for the high incidence of cesarean operations. One is willing to grant that the surgeon is more skilled in abdominal surgery than the obstetrician, but surely one does not grant that his obstetric judgment is as good. He delivers by his best method, cesarean section: for he knows little or nothing about delivery from below. In Winston-Salem, the obstetricians were responsible for twice as many cesarean operations as the surgeons in 1938 and three times as many in 1939. Omitting the surgeons' cases in 1939, the incidence would still be over 5 per cent. The indications for section given by the obstetricians were no better than those of the surgeons, but their maternal mortality was definitely less.

Most authorities agree that the incidence of cesarean operations should not be above 5 per cent of all deliveries⁽⁵⁾. In hospitals where much higher percentages are found, obstetric judgment is presumably deficient.

Table 3 shows the maternal and fetal mortality from cesarean section for the same North Carolina cities. As this paper deals chiefly with fetal mortality, I wish to call attention only briefly to the maternal mortality, in order to point out that it is too high and that risk of delivery from below in this series was only one sixth to one eighth as great as the risk of section. The fetal mortality is extremely high. More than one out of ten babies fail to survive the operation. While some may boast that they have never lost a mother by cesarean section, surely no one can say this about the baby. The infant death rate from vaginal delivery

	Mat. Mort.		Percent.		Inf. Mort.		Percent.	
YEAR	1938	1939	'38	'39	1938	1939	'38	'39
Asheville	0	0	0	0	3		8	
Charlotte	1	1	4	3	8		14	
Durham	4	1	7	3	13	20*	22	43*
Greensboro	3	1	6	2	4		8	
High Point	1	0	9	0	0		0	
Paleigh	1	3	4	4	3		11	
Wilmington	1	1	3	3	3		9	
Winston-Salem	2	3	3	3	12	13	18	14
TOTAL	13	10	4	4	46		14	

Infant mortality by vaginal delivery 8 per cent. Omitting stillbirths 4 per cent.

Maternal mortality following vaginal delivery 0.6 per cent.

* Duke Hospital only.

Table 3. Maternal and fetal mortality from cesarean section.

shows that this method, whenever it can be used, is still the safest.

Table 4 is an analysis of the deliveries in the cities having the largest fetal mortality. It will be noted that the incidence of cesarean section and the fetal mortality were high at Duke in 1938, but it must be remembered that a large proportion of their cases are referred and that it is more or less a dumping ground for the neglected and unfortunate patients in a large surrounding territory. In neglected or rare cases it stands to reason that the fetal mortality should be high.

There were twenty fetal deaths at Duke Hospital following cesarean section in 1938 and 1939. In eight of these cases the infant was premature and the operation was performed to interrupt pregnancy for the sake of the mother, with no thought of obtaining a living child. In three cases there had been severe toxemia of pregnancy; two of the infants were stillborn. Five deaths, all stillbirths, occurred from abruptio placentae. Two deaths, both being stillbirths, occurred in postmortem cesarean sections. One neonatal death was from a secondary cesarean. The autopsy showed congenital atelectasis. One death was neonatal, autopsy showing bilateral atelectasis. In this case the operation was done on a woman with postoperation pelvis and postradiation goiter. In this group of deaths, even if delivery from below had been possible, it is doubtful that the infants would have lived, except in two or three cases.

In Winston-Salem the City Memorial Hospital includes the colored hospital (Kate Bitting Reynolds Memorial), and cares for the charity cases of the city, as well as a large number of private cases. The Baptist Hospital has very little obstetrical charity, and in the above figures only one section was done on a charity case. The rest are private

1. Dunn, Richard B.: Saint Leo's Hospital Bull. (May) 1939.

5. Titus, Paul: Cesarean Section, Its Relation to Maternal Mortality, New York State J. Med. 39:1173 (June 15) 1939.

HOSPITAL . . . YEAR	WINSTON-SALEM CITY				DURHAM DUKE	
	1938	1939	1938	1939	1938	1939
Deliveries	345	760	538	552	546	656
Sections	28	32	39	65	41	20
Percent. Sections . .	3	4	7	11	7	3
Mat. Mort.	2	3	0	0	4	2
Percent. Mat. Mort.	7	9	0	0	10	10
Inf. Mort.	8	7	4	6	11	9
Percent. Inf. Mort.	26	22	10	9	27	45
Stillbirths	2	3	0	1	9	3
Percent. Stillbirths	7	9	0	2	22	15

Table 4. Analysis of deliveries in hospitals having the largest fetal mortality.

cases, with adequate prenatal care. It is, therefore, somewhat surprising to see the high incidence of cesarean section in this type of practice. This group should give us practically no fetal mortality if cesarean section is always safe for the child.

There were fifteen fetal deaths at the City Hospital among cesarean section cases in 1938 and 1939. The operation apparently was necessary in eight cases. The other seven cases are open to criticism. Seven out of the fifteen operations were necessary for the immediate welfare of the mother.

Three deaths occurred with abruptio placentae, all the infants being stillborn. Four deaths occurred with placenta praevia, all the deaths being neonatal; three were due to prematurity. Two deaths were from hydrocephalus and spina bifida. In these cases a cesarean should never have been performed. Two deaths were attributed to toxemia of pregnancy; however, from the record it seems that the operation was performed for sterilization and not because of the toxemias, which were mild. Two deaths occurred in full term infants. In both cases section was done for contracted pelvis, although both women had had children previously by the vaginal route. One of them, however, had recently had a plastic repair. Autopsies of these infants showed hemolytic anemia and hemorrhagic disease. Two deaths occurred in a postmortem cesarean. The death of the mother was due to eclampsia, and both infants were stillborn. One death was due to prematurity from a hysterotomy on a six-months fetus.

The Baptist Hospital had ten fetal deaths from cesarean section in 1938 and 1939, an incidence of 10 per cent. Only three of these operations had adequate indications, the other seven being open to criticism. Nine deaths were neonatal, the infants living from one to forty-eight hours. One child was stillborn.

Five neonatal deaths may be attributed to prematurity, but it is interesting to note that in only one case was the operation done in the interest of the mother, and this was a psychiatric case in which pregnancy was interrupted at seven months. In the other four cases the doctor completely misjudged the age of the infant. They were elective cases, with no indication for immediate operation. In two cases the indication listed was toxemia of pregnancy, which was quite mild. The third case was for contracted pelvis; however, the patient had been delivered previously per vagina of an infant weighing 5 pounds, and the cesarean baby weighed only 3 pounds, 13 ounces. The fourth section was done because the patient had only one kidney. Urine examination, however, showed a specific gravity of 1.024 and no albumin; her blood pressure was 125 systolic, 70 diastolic.

Four neonatal deaths are not explainable. One occurred in a cesarean operation following a trial labor of five hours, the indication being cephalopelvic disproportion. One followed an elective cesarean done because of previous third degree tear, which had been repaired. The other two deaths occurred following elective operation for which no reason was given. All four infants were at term, according to their weight.

The one stillborn infant was in a case of abruptio placentae.

It is true that stillbirths resulting from premature separation of the placenta account for a number of deaths in this small series. This, of course, is an unavoidable accident. It is also true that a large number of neonatal deaths resulted from prematurity of the infant, and that some of these deaths could have been prevented.

Some of the deaths might have been due to a cerebral injury, which can occur in an abdominal operation. Brander⁽⁶⁾ found 72 cases of intracranial lesions verified postmortem in children delivered by cesarean section. In some of these cases a tearing of the tentorium was discovered. He lists these causes for fetal mortality: (1) Too short an incision, which may increase the danger of an intracranial lesion; (2) extraction by the feet, which seems to be more dangerous than freeing the head first; (3) instrumental development of the head; (4) too violent

6. Brander, T.: Ueber zerebral defekte Kaiserschnittskinder, *Acta paediat.* 28:145, 1938.

resuscitation; (5) asphyxia; (6) anesthetics.

DeLee⁽⁷⁾ states that some babies are lost even when local anesthesia is used. So far he has found no explanation for this, but he suggests that the liquor amnii, which is more apt to be squeezed out of the lungs during a vaginal delivery than in abdominal delivery, may play a big part. He believes that a cesarean done when a woman has been in labor for some time is less likely to deliver an asphyxiated baby (other things being equal) than an elective cesarean.

Conclusions

From this small survey, it would seem that too many cesarean sections are being done with inadequate indications, and that the fetal mortality, even under ideal conditions, is too high. If we are to lower our mortality from cesarean sections, we must pay more attention to the contraindications, which are⁽⁸⁾: (1) A dead child, except in the presence of an absolute pelvic indication; (2) poor physical condition of the mother; (3) improper surroundings for aseptic technique; (4) acute infection within the birth canal. Finally, as Kanatser has stated⁽⁹⁾, "The most important contraindication to cesarean section is the performance of an operation without valid indications. In other words, the operation should never be performed until a very careful study of the recognized indication and contraindication has been made from the standpoint of immediate and remote mortality and morbidity of the patient, with delivery by cesarean section as compared with other methods of delivery. We should advise cesarean section in the interest of the patient and not for the convenience of ourselves. Furthermore, cesarean section should not be employed as a means of last resort, after the mother is exhausted, nor should these operations be done by a physician because he does not know how properly to overcome dystocia by vaginal manipulations. Such physician should call into consultation an obstetrician or a physician experienced enough in obstetrics to decide properly whether or not an abdominal operation is necessary."

7. DeLee, Joseph B.: The 1940 Yearbook of Obstetrics and Gynecology, Chicago, Year Book Publishers, Inc., 1940.

8. Phaneuf, L. E.: Progress of Cesarean Section, *Am. J. Obst. and Gynec.* 40:603 (October) 1940.

9. Kanatser, J. E.: Indications and Contraindications for Cesarean Section, *South. M. J.* 33:1023 (October) 1940.

PUBLIC HEALTH PROBLEMS CREATED IN FLOOD DISASTERS

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From the mountains to the sea during the last fateful days of August, 1940, the rivers in the northwestern and northeastern sections of North Carolina went on a roaring rampage, destroying homes, crops and bridges, and sweeping away practically everything in their devastating paths, to leave scenes of desolation and despair such as had not been witnessed in these parts of our Southland since the ravages of the Civil War.

At Weldon the Roanoke River, or the River of Death, as the Indians correctly named it years ago, usually rolls along at a height of twelve feet; but after the torrential rains of August, it suddenly assumed the proportions of a watery giant, with a dizzy height of 58 feet, spreading far beyond its banks and charging through dikes to cover 29,230 acres of splendid crops and 960 homes, and to drive 4,800 persons in four counties to higher land.

With the municipal water plant in Weldon submerged in filthy river water and the water intake for the municipal plant at Roanoke Rapids seriously damaged, with wells and pumps on all the farms in the watershed flooded, with privies bobbing around in the swirling river like bottles, with hundreds of refugees pouring into Weldon and other high points along the river, those of us in the local health departments in this area realized that we were in the midst of a disaster of the first order.

The Roanoke River rose at an amazingly rapid rate for three days, then held its crest for what seemed to be an endless period, and, finally, slowly receded to leave its filth and debris dumped at our doors. A foul stench hung like a pall over this area for several days following the flood, strongly reminding our olfactory nerves that the Health Department had work to do and plenty of it.

In looking back over our efforts during this emergency I find our activities were divided roughly into three phases: first, organization; second, procedures during the

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flood disaster; and third, rehabilitation and reconditioning procedures after the flood had receded.

In organizing the work our first major effort was the selection of quarters for the refugees, white and colored, who were pouring into several towns along the river. We joined forces with the local Red Cross Chapter, which, fortunately, was well organized and ready for action.

The schools, with their cafeterias and sanitary facilities, naturally answered best for the purpose of refugee camps. Rooms were cleared by W. P. A. workers, who were at our command through the splendid cooperation of our local supervisor, and all available cots were secured through efforts of the Boy Scouts, who also assisted us nobly in our hectic experiences with the Roanoke River. The cooks secured for these camps were for the most part already associated with the school cafeterias. Members of the Parent-Teacher Associations volunteered to assist in serving the refugees.

Helpers were selected from the refugees to assist in looking after the water supply, which had to be obtained from tank trucks and then boiled before being used for drinking or for cooking. These helpers also were charged with the responsibility of keeping the quarters clean and of running errands.

A public health nurse was placed in charge of each one hundred refugees, and was made directly responsible to the physician in charge and to the health department.

A physician was placed on call for each camp of not more than four hundred refugees, and for our largest camp of more than six hundred Negroes, a resident physician, Dr. Emmett Lupton, was secured. Dr. Lupton made an enviable record in his management of this large camp. In a camp of this size a resident physician is an absolute necessity, with at least two day nurses and two night nurses, the number of nurses, of course, depending on the condition of the refugees.

A sanitarian was made responsible for frequent inspections of the water supply, sanitary facilities, and general environment of each camp. With the municipal water supply out of operation it was necessary to keep large barrels of water in the toilets for flushing purposes. These toilets had to be supervised constantly to prevent a serious health hazard.

When the refugees were placed, we next joined with the city officials of Weldon in planning an emergency supply of drinking water. This was the most paradoxical problem we had. There was "water, water everywhere, but not a drop to drink." From the Highway Department we secured tank trucks, which were heavily dosed with H. T. H. before being filled with water from the municipal plant at Roanoke Rapids, five miles from Weldon. The officials at Fort Bragg furnished us a mobile filtering plant which supplied 144,000 gallons of filtered water every twenty-four hours.

The tank trucks distributed the water up and down the streets to citizens who were waiting with buckets and utensils of all shapes and sizes. Circulars were distributed in the flood area, warning everyone to boil water, regardless of the source, for ten minutes.

By this time we had ordered a large supply of triple typhoid vaccine, smallpox vaccine, diphtheria toxoid, and tetanus antitoxin, and were trying to locate sufficient quantities of chlorinated lime, H. T. H. or perchlorin. These products are usually stocked in small quantities in most communities, and efforts should be made at an early hour to secure an adequate supply.

It is wise also to order plenty of vaccine at the very beginning in any major disaster of this sort, since the public literally clamors for immunizations at this time. The total amount of typhoid vaccine ordered for the immunization clinics conducted by the health department and by private physicians was 2,900 10 cc. vials.

The next step in the organization phase was to determine as nearly as possible how many additional nurses and other personnel we needed to carry out our emergency program. In Halifax County we used twelve nurses. Four were from our own staff, three were Red Cross nurses, two were public health trainees from Chapel Hill, two were local nurses, and Dr. Cooper sent us Miss Beam from his department. We requested the State Health Department to have an engineer standing by to supervise the reconditioning of our water plant when the river receded. Mr. Jessup and Mr. Williams from the Division of Sanitary Engineering were on hand to assist in sanitation. Local physicians volunteered for service in the refugee camps, and the Junior Woman's Club fur-

nished us clerical assistance. A number of Boy Scouts were detailed to our department to run errands, distribute our circulars, and direct the public to our immunization clinics. The W. P. A. furnished us men who were placed under the supervision of Mr. Williams and our sanitarians.

Our courage and morale were maintained by almost constant contact with the State Health Department. We had hardly realized we were having a flood when Dr. Reynolds first wired us to advise him of our needs. Our biological preparations were furnished us promptly in large quantities, and experts were on hand to assist us at all times in the technical problems that were constantly arising.

With our personnel completed we worked out a daily schedule for the refugee camps and for the immunization clinics throughout the Roanoke River watershed. These clinics extended for a distance of thirty-five miles from the health department in Weldon. In addition to the immunization clinics conducted by the health department, the physicians at Roanoke Rapids had two clinics running simultaneously every day during the flood.

During this disaster we immunized 14,395 persons against typhoid fever and 200 children against diphtheria and smallpox. In the refugee camps everyone who had not been immunized against typhoid fever within the past two years was told that this vaccination had to be done. The refugees' meal tickets depended on whether or not they had been immunized. Prophylactic doses of quinine were given to all refugees daily to prevent a wave of malaria.

The nurse in charge of each group of refugees made thorough inspections of all refugees twice daily, and persons with any temperature or significant complaints were referred to the physician in charge for a further examination. Injuries that might need tetanus antitoxin were carefully watched for.

A sanitary inspector made a thorough inspection of each camp every few hours, in order to maintain as clean an environment as possible.

In Dr. Lupton's camp there were threatened abortions, cystitis, malaria and many other ailments, but not a single case of enteritis developed while he was there. All the

babies were kept on evaporated milk feedings under Dr. Lupton's supervision.

It is important that all animals should be prohibited in refugee camps. A mad dog running wild among several hundred refugees would cause a general panic.

With the flooded river reluctantly receding, the rehabilitation phase of our program began.

Mr. McKimmon, from the Division of Sanitary Engineering of the State Health Department, was on hand by the time the water plant was clear of river water, advising the local authorities of the steps necessary to put the system into operation with a safe supply of water. Our experience in this flood proved that it is wise not to take any short cuts in putting the water system into operation, but to make certain the system is sterile before opening the mains for public consumption, even though the public howls for water.

After the whole plant had been cleaned and freed of its heavy coating of yellow ooze, the mains were filled with the water held in reserve in the city tank, carrying a chlorine content of 10 to 15 parts per million. This strength of chlorine was probably maintained in the mains for about forty-eight hours, although the dosage of chlorine was lowered at the plant immediately after the initial filling of the mains. The chlorine content of the water in the mains was then maintained at 1.5 parts per million for two weeks, when it was cut to 1 part per million. It was held between .7 and 1 part per million all winter, and was lowered to .5 parts per million the first of March. It is now at .4 parts per million, or within .1 of the usual chlorine concentration of water prepared with a rapid sand filter.

The public was allowed to use water from the mains a few hours after the original filling; however, we still insisted that it be boiled before being used for drinking until after we had obtained samples along the mains. This was a needless request, since the water was so strong with chlorine that it had to be boiled before people could get it close enough to their faces to drink it. Only two water samples were positive for *B. coli*; the third sample from this vicinity was negative.

Until the present time there has not been a single case of any disease in Weldon that

could have been caused by contaminated water.

One hundred W. P. A. workers were detailed to bury dead animals, clean up the filth and debris and to drain or oil impounded water.

As soon as we could get into the areas where the homes had been under water, instructions were issued for reconditioning these houses. The refugees were decentralized as soon as possible, in order to lessen the chances of herd diseases' developing. The floors and walls of these flooded houses were thoroughly scrubbed with hot, soapy water, to which was added about two and one-half teaspoonfuls of H. T. H. or seven teaspoonfuls of chlorinated lime per gallon. All furniture had to be cleaned with hot, soapy water. The instructions were distributed by Boy Scouts and sanitary inspectors. As far as possible, these homes were inspected by the health department before being reinhabited.

In the rural areas all the wells had to be sterilized before the water could be used. One-half pound of H. T. H. or perchlorin, or two pounds of chlorinated lime was mixed with water in a two-gallon pail. This was poured into the wells, allowed to stand for twenty-four hours, and then pumped off.

On every large farm a reliable person was selected to carry out these procedures after a demonstration had been given. The H. T. H. for this work was furnished by the Red Cross.

The privies that could be found were reset by W. P. A. workers, while a project to build three hundred new privies to replace those lost was instigated immediately following a detailed survey of the flooded area. This privy project was also financed by the Red Cross.

In the meantime, the immunizations were finished and the refugees were returned to their homes, while all of us who had been on duty practically day and night during this nerve racking experience "ceased firing" and hoped that, in the name of health, victory would be ours.

Summary

1. Schools with cafeterias, and with sewage facilities for men and women should be selected for refugee camps when available.

2. At least one public health nurse should be placed in charge of each one hundred refugees when sickness and injuries are at a minimum. This nurse should make inspec-

tions twice daily for temperature, signs and symptoms of contagious diseases, and for injuries.

3. A full-time resident physician is needed for a camp of more than four hundred refugees, and at least one physician should be placed on call for each smaller camp.

4. A sanitary inspector should be assigned to each camp.

5. An adequate supply of triple typhoid, diphtheria, and smallpox vaccine, as well as tetanus antitoxin, should be ordered at once, and immunizations against typhoid fever, diphtheria, and smallpox should be started immediately.

6. When the water supply is involved, all water should be boiled at least ten minutes before being used, and the State Health Department should be notified to have an engineer on hand to supervise the re-establishment of the water supply.

7. The local health department should immediately call on the State Health Department for a consultant to help maintain as healthy an environment as possible and to supervise the reconditioning program.

8. At least 100 pounds of H. T. H. should be on hand for every five hundred refugees involved. This should be obtained early through the Red Cross when possible, as the supply usually is very limited in any locality.

9. Each well should be sterilized with one-half pound of H. T. H., and all flooded homes sterilized with a solution made up of two and one-half teaspoonfuls of H. T. H. to each gallon of water.

We humbly pass the results of our experiences along to our fellow public health workers who also might find themselves engulfed in such a disaster at some time in the future, whether it be a flood, storm, fire or perhaps a war disaster.

Abstract of Discussion

Dr. H. G. Baity (Chapel Hill): Dr. Young's paper is so complete that I do not feel I can add anything of a technical nature. I think that this paper might well serve as a guide book to health agencies which may meet similar situations, and I strongly recommend that it be published and made available either through this organization or through the State Department of Health.

I should like to mention briefly the matter of planning an organization to meet a situation of this sort. We do not engage in planning to any great extent, and situations of this sort strike us unprepared. I had personal experience in disaster of a different sort several years ago which emphasized to me the chaos and loss of time that may result from lack of planning for disaster. In this situa-

tion much time was lost and a great deal of confusion resulted from nobody's knowing who was to be the responsible, directing agency. People were eager to lend their assistance, but there was no arrangement whereby those people and the various agencies could work together in a functioning organization.

All of us sooner or later, through disasters such as flood or fire or war, may meet situations such as Dr. Young spoke of; and it is not too early, even if war is the only emergency we think of, to prepare, in coordination with other interested agencies, at least an outline of what to do and how to do it in event of disaster. That necessarily must be skeleton in form, because the exact type of organization and procedure to be followed depends upon the nature of the cataclysm. If it is a local situation, then the local health department assumes leadership; if it is more than local, then the State Health Department takes over.

It is not too early for us to prepare for situations that may arise in the event of war. Let us make these plans today and stick them away, in case they may be needed. Then they will be very valuable.

Dr. C. N. Sisk (Waynesville): Dr. Young asked me to discuss this paper from the standpoint of floods in the mountains, in contrast with floods in the low country.

The only difference I can see between floods in the mountains and in the low country is the element of time. In the low country, when it rains a great deal, you realize that the streams are rising, and your radio and newspaper keep you informed. You have time to select refugee camps and make other preparations. In the mountains, the first realization that there is a flood may come when you are awakened during the night to find your house flooded and perhaps floating away.

On August 15, 1940, we had a flood in the mountains of western North Carolina which was said by the oldest citizens to be the greatest flood ever known. After we had cleaned up, we sat back, thinking that we had had an experience which no one else had ever had. On August 30, following two or three days of heavy rain, the heavens opened up at night again and the waters rose from three to ten feet higher than they did on August 15.

Our organization and plan of procedure following this flood were very similar to Dr. Young's. However, he was forewarned and was able to get his population into a camp. We did not have that warning. Furthermore, the mountain streams flow between the mountain ranges, and the one highway follows the stream. In the valley of the Tuckaseegee River, which runs through Jackson and Swain Counties for a distance of forty or fifty miles, every highway bridge and all minor bridges were washed away. One of our greatest difficulties was getting into the communities. If you were on one side of the river you could not get to the other side. The Highway Department and the W. P. A. went to work immediately to repair those bridges, and in a short time we were able to get into the communities. In this area, which was only a very small part of the flooded area in western North Carolina, sixty-seven homes were washed away. There were two hundred and fifty-one homes damaged, and the damage to roads and bridges was estimated by the Highway Department at \$252,000. The damage to homes was estimated at \$27,000. The damage to homes involved injury to many people. We mimeographed sheets of instructions received from the State Health Department and distributed them as rapidly as possible to all homes in the affected

neighborhoods. Those sheets described how to recondition water supplies and food. The instructions called for the people to empty their springs and wells. I notice that Dr. Young did not mention emptying the wells. We asked the people to empty their wells, put in chlorine, and after twenty-four hours empty them again.

A great many people in this area can fruits and vegetables and store them in the cellars or in the houses. We insisted that these cans, either glass or tin, be immersed for twenty minutes in a chlorine solution. Many grocery stores were damaged. We recommended the destruction of vegetables that were edible without cooking. Our vaccination camps were organized just as Dr. Young's were, except that we went to the communities to do it. I noticed that his were centralized and wondered how he reached the people for the second and third doses, after they had scattered.

Dr. Young said that no typhoid fever or similar disease could be attributed to the flood in his section, and we in western North Carolina can say the same.

Dr. Young: In answer to Dr. Sisk's question about completing the immunization schedule, there the peculiar characteristic of our slowly receding flood came to our aid. We were able to give two injections of typhoid vaccine before the refugees were decentralized. Before we let them leave our camps we arranged for them to meet us at certain points throughout the Roanoke River watershed so that we could give them the third dose.

I wish to mention again the splendid cooperation that exists between the local health departments and our State Department. This was indelibly imprinted upon my mind during this flood.

I thank those who discussed this paper and thank you all for your attention.

INTRANASAL TUMORS

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The nasal passages and accessory sinuses are the site of more tumors than is any other part of the body except the cervix and uterus of the female. This area of secreting mucous membrane, closely attached to bone and cartilage, has a blood supply somewhat peculiar to itself, and is exposed to considerable irritation, changes of temperature, and trauma.

The ala nasi up to the anterior end of the inferior turbinate is lined with stratified squamous epithelium. The nasal passages and the sinuses, excepting the superior meatus, are lined with so-called respiratory epithelium—that is, columnar ciliated epithelium—presenting varying degrees of thickness in different locations. For example, the epithelial lining of the sinuses is composed of low cells, almost cuboidal in type, while the turbinates are covered by very tall, columnar cells which may be more than one

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layer deep and give a pseudo-stratified appearance.

Tumors arising in this area present a diversity corresponding to the diversity of normal structures, and it is probable that the variations encountered in the malignances of the nose and sinuses are chiefly due to differences in ontogeny. However, metaplastic changes contribute a great deal to a variable morphology.

A typical squamous cell carcinoma arising from the squamous cells about the alae and anterior ends of the turbinates may show all the characteristics of skin cancer, such as keratinization and cell nest formation. From the transitional epithelium over turbinates and nasal meatus, there may arise tumors greatly resembling the typical transitional celled carcinoma of the bladder. Arising from the cuboidal cells of the lining of the sinuses, there may be columnar-celled adenocarcinomas with the formation of well defined solid or cystic alveoli. Even the ciliated character of the normal cells may be reproduced in the malignancy.

There is no evidence that the neuro-epithelium (olfactory cells) of the superior meatus gives rise to neoplasms in the nose, but the supporting cells and the basal cells in this area can both give rise to tumors.

In addition to the tumors which arise from the nasal mucosa itself, the sinuses and nasal passages may be invaded by connective tissue—endothelial tumors and tumors of dentigerous origin. There are also rare tumors derived from the salivary glands.

Symptoms

Early symptoms are often extranasal. There may be ocular pain in the forehead and side of the face and temple, earache, toothache, deafness, tinnitus, diplopia, dysphagia, blindness, or hoarseness.

The most common local symptoms are:

1. Swelling of the cheek
2. Unilateral nasal obstruction
3. Epistaxis
4. Nasal discharge
5. Pain in the cheeks and teeth
6. Proptosis
7. "Gumboil"
8. Widening between the eyes.

Treatment

In discussing the treatment of such tumors, the scalpel must be omitted almost entirely.

Electrocoagulation, radium and x-ray are the implements with which to eliminate intranasal tumors. It must be remembered that with these three agencies there must also be a good pathologist, a good radiologist and a good surgically trained clinician for the proper treatment of cancer about the nose and sinuses.

The advantages of electrocoagulation are: (1) ease of operation, (2) lack of hemorrhage, (3) lack of pain and shock, (4) sealing off of lymph spaces. Objections to this method are: (1) that it may not catch outlying cells; (2) that it sacrifices some healthy tissue; (3) that the cosmetic effect may be poor; (4) that there is some operative risk; (5) that the major blood vessels may be injured.

The advantages of irradiation are: (1) that it is not frightening to patients; (2) that it leaves good cosmetic result; (3) that it catches outlying strands and metastases in adjoining glands. Objections to irradiation are: (1) that, insufficiently screened, it may give burns, periostitis, perichondritis and other painful reactions; (2) that inadequate irradiation may stimulate cancer cells, or seal them in scar tissue; (3) that it makes cancer resistant to further treatment.

Fortunately x-ray and radium work best on the tumors which are not successfully treated by electrosurgery.

There are some established facts concerning the effect of different types of treatment which are of considerable help in deciding the treatment of choice in a given case.

1. Location of tumors is an important factor in determining what method of treatment shall be used. Favorable sites for electrosurgery are the face, ear, nose, lips, alveolar ridge, maxillary sinus, palate, epiglottis and anterior part of the tongue.

2. Pedunculated tumors are good cases for electrosurgery. A fissured sessile tumor at the base of the tongue or on the pharynx should be treated by irradiation; history of a very rapid growth would be in favor of irradiation.

3. It was early known that the embryonal types of tumors were radiosensitive. Differences in the age of *Drosophila* eggs make a difference in the sensitivity.

4. Tumors are likely to be more radiosensitive in young patients, less sensitive in old, anemic patients.

5. Infection retards sensitivity.
6. Bulky tumors are resistant after infarction and liquefaction.
7. Metastases often undergo metaplasia and are more resistant than the original tumor.
8. Glandular carcinomas containing much mucin are resistant.
9. First irradiation is most effective. Tumors are much more resistant after the initial course of treatment.
10. Rapid early regression may lead to inadequate treatment.
11. Ligation or impairment of blood supply reduces the effect of irradiation.

Types of Tumors

Time will not permit a detailed discussion of all the tumors that attack the nose and sinuses. However, I should like to discuss in greater detail some of the more common intranasal tumors.

Polyp: The most common of all of the nasal tumors is the nasal polyp. This tumor is classified as a fibroma histologically. Under the microscope these tumors show sparsely arranged connective tissue cells, but are infiltrated with all sorts of wandering cells, including eosinophils and mast cells. Some of these fibromas are soft and loose and are called polyps; others are very dense and hard, and are usually classified as fibromas. When the intercellular fibers are little developed and the tumor is made up of closely packed cells, the growth may be rapid and invasive, and the tumor should really be called a sarcoma.

Clinically, polyps must be divided into two types—the allergic and the infectious. The allergic type of polyp is practically always bilateral and is accompanied by a pale mucosa and by an eosinophilia. The infectious type may or may not be unilateral. It is usually accompanied by pus and a red mucous membrane. Many cases have a combination of allergy and infection. In allergic cases the allergy should be treated first and the infection, if present, treated second. The mixed type may require surgery, which should be radical and complete and followed with some irradiation. Certain allergic types of polyps not so far advanced may be helped by irradiation alone. The infectious types are of course surgical and should be treated as a chronic purulent sinusitis.

Osteoma: Osteoma is a bony tumor which

also attacks the sinuses. It must be remembered that an osteoma is an encapsulated bony tumor growing out from a given point and that it must be differentiated from an exostosis, which is a hyperplastic bony growth of diffuse nature probably due to some inflammatory process in the periosteum. There are three different types of osteomas: the hard, eburnated; the spongy or cancellous; and the mixed type, which has a hard periphery and a spongy center. They are usually rather easily diagnosed by x-ray, and are most common in the frontal sinus. The treatment is entirely surgical, but it must be remembered that the pedicle from which the tumor arises must be destroyed.

Mixed Cell Tumor: Mixed cell tumors are occasionally found in the sinuses, particularly in the maxillary. They are tumors of the salivary gland type, but are aberrant—that is, they are not directly associated with the salivary glands. They may also occur in the retropharynx, lateral pharyngeal wall, cheeks, base of the tongue or palate. They occur in all ages. These tumors are potentially malignant and require a long observation period after their removal. In many cases their growth is slow. Like a great many other tumors, they are more likely to be malignant when they recur. Tumors that have been undisturbed rarely invade the lymph spaces, but after unsuccessful removal they frequently invade the cervical glands. Surgical removal by electrocoagulation is definitely the treatment of choice, since these tumors do not respond to irradiation unless the cells are of the glandular type.

Giant Cell Tumor or Epulis: These tumors arise from parts of bone which have been formed by cartilage. Since this is true, bones formed from membrane should be immune to this particular tumor. Bloodgood regards them as benign tumors, but all writers do not agree. As for treatment, Bloodgood, Geschicter and others advise surgery; Ewing, Pfahler and others advise irradiation.

Fibro-Epithelial Tumor or Papilloma: There is much confusion about the classification of fibro-epithelial tumors or papillomas. This is probably because they are quite rare. They are usually regarded as benign growths which may be multiple or single and are rarely found anywhere except on the anterior portion of the septum; however, they may also be found on the middle

turbinate, in the ethmoid region, and even inside the sinuses.

The diagnosis cannot be made macroscopically because these tumors may have the appearance of a carcinoma in cases where tissue destruction has taken place. The prognosis is good if the tumor is in the anterior part of the nose where complete removal by cautery can be done. These tumors will recur if removed by snare or punch, and they must always be regarded seriously, since we can never prove that they will not finally become malignant. The ideal treatment is removal by electrocoagulation; however, they are fairly sensitive to x-ray and radium. If the sinus is involved, both radical surgery and x-ray are indicated.

Cavernous Hemangio-Endothelioma: This is a rare tumor which usually arises from the ethmoid region and does not metastasize. However, it is an extremely dangerous tumor because of its vascular structure and its tendency to destroy by infiltration. It may fill the entire nose and invade the sinus, eroding the walls. The symptoms are usually nasal obstruction, profuse epistaxis, and later, nasal disfigurement.

The tumor is usually soft, lobulated and dark purple. It must be differentiated from cavernous hemangioma, which is not a real tumor. The hemangio-endothelioma arises from blood vessel walls and should be regarded as a genuine tumor of this structure. Again, the ideal treatment is removal by electrocoagulation; however, hemorrhage is a problem with this method. Irradiation is effective in reducing the size of the tumor, at least, and has the advantage of producing no hemorrhage.

Adamantinoma: Adamantinoma originates from the paradental epithelial debris, while an odontoma or dentigerous cyst is a real teratoma arising from the dental follicle and is characterized by an embryonic tooth in its walls. This tumor is slow growing and distends the tissues until they are parchment-like around the tumor. It occurs chiefly in adults and frequently follows tooth extraction. Ewing says this tumor is more apt to be solid in the upper jaw and also more likely to be malignant in this location. This tumor is difficult to remove in its entirety, and I believe it is seldom cured. Surgical removal with electrocoagulation is the treatment of choice.

Basaloma or Cylindroma: The basaloma or cylindroma is also called endothelioma and

basal cell carcinoma. These tumors are comparable to the basal cell growths arising from the skin, except that those of the mucosa are usually adenoid or cystic in type, while those of the skin are solid. Grossly they are fleshy, sessile and firm. They may have the appearance of a fleshy polyp, and they bleed easily. They advance rapidly by extension, but do not metastasize. This tumor is radiosensitive, but has a marked tendency to recur after removal. The best method of treatment is radical resection and irradiation if the tumor is within a sinus, but if it is exposed, irradiation alone is probably the treatment of choice.

Carcinoma: Most of the carcinomas of the nose and sinus are more or less sensitive to irradiation. Tumors of this class which are definitely radiosensitive are lympho-epitheliomas, transitional cell types, basal cell carcinomas and glandular carcinomas without mucin. Tumors that are more radio-resistant are mature cell squamous epithelial types, epidermoid carcinomas in the ethmoid area, glandular types containing much mucin, and melanomas.

Sarcoma: Lymphosarcomas and allied small round cell types are very sensitive to irradiation. The fibrous types, such as the spindle cell and the osteo and chondrosarcomas, are much less sensitive. The last two tumors mentioned are not as violently malignant as the ones mentioned above and may be treated with electrocoagulation, when they can be reached.

There are other rare tumors of the nose, such as chordomas, plasma cell tumors of the nose, and lympho-epitheliomas, which will not be discussed in detail in this paper.

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The Ulcer Patient.—Today, attention is focused more largely on the person who has the ulcer than on his stomach or duodenum: on his heredity, his physical, mental and emotional make-up, the nature of his endocrine and autonomic nervous system equipment, his social status and his personal habits of life. The thin, lantern-jawed, hungry-looking person with a nervous, introspective and sensitive temperament is the one likeliest to develop peptic ulcer.—T. Grier Miller: The Management of the Complications of Peptic Ulcer, New England J. Med. 224:401 (March 6) 1941.

Alkaline Medication in Bleeding Ulcers.—I doubt the necessity of alkaline medication in bleeding ulcers and suspect that often it is a factor in the disturbed chemical condition of the patient. Our patients have seemed to do equally well without any such medication.—T. Grier Miller: The Management of the Complications of Peptic Ulcer, New England J. Med. 224:403 (March 6) 1941.

RECURRENT UROLITHIASIS

G. AUBREY HAWES, M. D.

CHARLOTTE

Since the advent of x-ray and the modern urological instruments, urinary calculi may be diagnosed early and surgical removal accomplished before irreparable renal destruction has resulted. At the present time one of the major problems confronting urologists is the recurrent formation of calculi following operation, and in view of the frequency of recurrence, the surgical procedure must be considered as only one phase in the management of cases of urinary lithiasis. The literature on the subject of calculous disease of the urinary tract is voluminous; however, only comparatively recently has the problem of recurrent lithiasis received the consideration it deserves. Patients with urinary calculi who present themselves for surgery should be informed as to the average percentage of recurrence, and should be urged to insist on close urological supervision for an indefinite period after operation in order to prevent recurrence. The major reasons for surgical removal of a urinary calculus are to relieve the patient of pain and to prevent renal destruction. In the light of our present knowledge, if a patient is permitted to return to his usual habits of living without intelligent aftercare in order to prevent a recurrence, then the urological surgeon is certainly taking an unnecessary responsibility upon his shoulders.

In considering this subject, one should bear in mind the possibility of a pseudo-recurrence, caused by a fragment of stone not removed at operation. In order not to confuse these two conditions, it is necessary to take a postoperative roentgenogram to be sure that no fragment has been left.

In 1915 Cabot and Crabtree¹⁾ reported a recurrence of stone in 56 per cent of cases in which nephrotomy was performed and in 51 per cent of those in which pyelotomy was used at the Massachusetts General Hospital. Seven years later, Barney⁽²⁾ reported a recurrence of 32 per cent at the same hospital;

and it is interesting to note that 45 per cent of the recurrences were demonstrated by roentgenograms to be pseudo-recurrences. In 1924 Braasch and Foulds⁽³⁾ reviewed 819 cases of urolithiasis, and reported recurrences in 10.48 per cent. In 685 cases subjected to surgery 31, or 4.5 per cent, had positive x-ray shadows of stone immediately after operation (pseudo-recurrence). Brongersma reported a recurrence of 23.6 per cent following pyelotomy and 35.4 per cent following nephrotomy. Hunner⁽⁴⁾ in 1927 reported recurrences in 9.5 per cent of cases following operations for renal calculi, and 4.4 per cent following surgical removal of ureteral calculi. In 1931 Herbst⁽⁵⁾ reported a 15 per cent recurrence of stones following operations. Twinem⁽⁶⁾, in 1937, carefully reviewed 56 postoperative calculous cases which had been followed for one and one-half years in the Brady Urological Foundation. Excluding pseudo-recurrences, there were only 3 recurrences (5.36 per cent). He believes, as do many urologists, that making x-ray films while the patient is still on the operating table, after all the stones have presumably been removed, is a most valuable procedure, especially in cases with multiple stones or large branched calculi. Twinem's report showed a higher percentage of recurrence following operations for multiple calculi than after operations for single stones; conversely, Braasch and Foulds found a higher percentage of recurrence in cases with a single calculus. Fifteen patients in Twinem's series had staghorn calculi removed; 6 of these, or 40 per cent, had recurrences. He does not state whether any of these patients with staghorn calculi had early postoperative roentgenograms. A report on this would have been both interesting and instructive, for all urologists realize how difficult it usually is to remove this type of calculus without breaking off one or more infundibular branches. Twinem points out that many writers refer to a stone-forming diathesis, or a type of metabolism favoring calculus formation; but apparently a local factor is also required, as recurrence is infrequent in the opposite kidney or in the kid-

Read before the Anderson County Medical Society, South Carolina, December, 1940.

1. Cabot, H. and Crabtree, E. G.: Frequency of Recurrence of Stone in the Kidney after Operation, *Surg., Gynec. and Obst.* 21:223-225 (August) 1915.
2. Barney, J. D.: Question of Recurrent Renal Calculi, *Surg., Gynec. and Obst.* 35:743-745 (December) 1922.

3. Braasch, W. F. and Foulds, G. S.: Post-Operative Results of Nephrolithiasis, *J. Urol.* 11:525-537 (December) 1923.

4. Hunner, G. L.: Calculus of Upper Urinary Tract Treated by New Methods; End Results, *Tr. South. S. A.* 40: 1-17, 1927.

5. Herbst, R. H.: Recurrent Renal Calculus; Its Cause and Prevention, *Ann. J. Surg.* 12:58-62 (April) 1931.

6. Twinem, F. P.: Study of Recurrence Following Operation for Nephrolithiasis, *J. Urol.* 37:259-267 (February) 1937.

ney which drains well after operation and is not infected. Charlie Higgins⁽⁷⁾ in 1938 stated that in the Cleveland Clinic prior to the year 1932 the incidence of recurrences was 16.2 per cent; from 1932 until 1937 the incidence had been reduced to 4.6 per cent. This marked reduction was ascribed to the fact that the high vitamin A, acid or alkaline ash diet had been added to the other postoperative measures, thereby controlling the hydrogen ion concentration of the urine.

Higgins^(7a) noted in reviewing 100 cases of recurrent lithiasis that during the first three years after operation recurrences had developed in 57 per cent. He believes that diligent postoperative care immediately following operation is imperative; and that, after the three year period, there is a marked diminution of the incidence of recurrence. In this series the staphylococcus albus was the predominant organism producing renal infections, while the proteus organism was second in frequency. He noted that recurrence was more common in patients in whom the pH of the urine could not be successfully controlled. It should be stressed that the pH of the bladder urine is not a true indication of the pH of each renal pelvic specimen. Time and again in the Brady Urological Foundation I have seen postoperative calculus patients with a pH of 6.0 of the bladder urine, while the normal or unoperated kidney excreted a urine with a pH of 4.5, and the operated kidney excreted urine with a pH of 7.5. This fact should be constantly borne in mind in our postoperative treatment. Of course the most common reason for a persistently alkaline urine is infection, and the proteus organism is the one most resistant to treatment. When sulfanilamide and its associated compounds were first used for the treatment of proteus infections of the urinary tract the results were very promising, but gradually we have realized that these drugs are not entirely effective in eradicating this organism. Lowsley, Kirwin, Higgins, and many others are of the opinion that when we have a method of successfully combatting proteus organisms the recurrence of renal calculi will be reduced to a minimum. Spence and Baird⁽⁸⁾ in 1939 reported 164 cases of renal and ureteral calculi

and noted a 38.4 per cent recurrence in 86 cases of renal stones and 18 per cent recurrence in 78 cases of ureteral stones.

A review of this subject in several competent and well known textbooks of urology was most interesting, because of the dearth of material. Hinnman⁽⁹⁾ states: "A diet rich in vitamins (A, particularly, as in cod and halibut liver oil) is indicated in the patient from whom stones have been removed. A diet which will keep the urine well on the acid side may be helpful for all but cystin stones. However, the regular free ingestion of water (a glassful every one to two hours while awake) will be the best means of prevention during the stone-forming period." Cabot⁽¹⁰⁾ summarizes several reports on the incidence of recurrence, but gives no suggestions as to the prevention of recurrent stone formation. Young⁽¹¹⁾ does not discuss the prevention of recurrent urinary calculi in his textbook.

Etiology

At the present time there has been demonstrated no single etiological factor producing renal calculi; therefore, we are compelled to make a careful study of various conditions which have been shown by animal experimentation and clinical observations to have a part in the formation of urinary stones. Of course the factors which produce the original calculus may be responsible for a recurrent calculus; however, other etiological agents producing lithiasis may be introduced during the operation for a primary calculus or during the postoperative period.

Infection: For the past forty years, the relationship between urolithiasis and infection has been stressed. In 1895 Bartlett was of the opinion that infection plus stagnation was the major factor in the formation of calculi. Higgins has recently stated that much attention during the past few years has been directed to the power of the proteus organism to split urea, with the formation of carbon dioxide and ammonia; yet Brown and Earlam found that 40 per cent of Staphylococcus albus and 18 per cent of bacilli infecting the urinary tract possess a similar property. Nevertheless, it has been the experience of the Brady Urological

7. (a) Higgins, C. C.: Recurrent Renal Lithiasis, Review of 100 Cases, *J. Urol.* 40:184-192 (July) 1938.

(b) Higgins, C. C.: Recurrent Renal Lithiasis, *Cleveland Clin. Quart.* 6:18-28 (January) 1939.

8. Spence, H. M., and Baird, S. S.: Recurrent Renal and Ureteral Calculi, Management and Prevention, *Am. J. Surg.* 44:848-857 (May) 1950.

9. Hinnman, Frank: Principles and Practice of Urology, Philadelphia, W. B. Saunders Co., 1936.

10. Cabot, Hugh: Modern Urology, Philadelphia, Lea and Febiger, 1936.

11. Young, H. H.: Practice of Urology, Baltimore, Williams and Wilkins Co., 1927.

Foundation and, I am sure, of many other clinics, that the proteus infections are the most difficult to control. The large amount of ropy, stringy, mucous material which this organism produces plays a major part in obstruction and stagnation. Even though a certain percentage of staphylococci and bacilli possess this urea-splitting property, it is rare to have as much renal destruction result from infection with these organisms as from infection with proteus organisms. John Hellstrom⁽¹²⁾ in 1938 stated: "For the past 15 years I have been specially interested in the importance of staphylococci in the formation of stones; and, I have come to the conclusion that the staphylococci are the most important cause of the occurrence of calculi with infections of the urinary passages." In a review of 100 cases of stones, Hellstrom found that 75 per cent were caused by staphylococci. He analyzed these stones by dissolving the calcium salts with dilute hydrochloric acid, which left a varying amount of organic material; this material when smeared on a slide and stained by the Gram method was found to consist mainly of staphylococci, the majority Gram-negative but some Gram-positive, and others transitional. In several cases Staph. albus, presenting the same properties as the staphylococci in the urine, was cultivated from the nucleus of the stones; and he concluded that the origin of stone formation was intimately associated with the staphylococcuria. Furthermore, in cases with sterile urine, examination of the organic material showed that the stone formation was infectious and not aseptic. Again, Hellstrom described the extirpated kidneys or other operative specimens in his series of staphylococcal stones as showing the presence of chronic pyelitis and ureteritis (round cell infiltration in the mucous membrane of the renal pelvis and ureter), but very slight parenchymal lesions. The few cases of severe pyelonephritic lesions were thought to be the result of a secondary infection with bacilli. On the contrary, most urologists are of the opinion that staphylococcus infections are the most common cause of purulent processes in kidneys or other organs. Hellstrom's findings of pronounced inflammatory changes in the minor calyces, with desquamated epithelium and with cal-

cium salts encrusting the mucosa, agree with Randall's description in 1936. In preventing recurrences, Hellstrom believes that intravenous neosalvarsan, proper urinary antiseptics, free urinary drainage, renal pelvic lavages, removal of foci of infection, and large doses of vitamin A as suggested by Higgins are the most effective methods at our disposal. In spite of these measures, he had 19 true recurrences, or 19 per cent, after operation, and over half of these recurrences appeared within the first year after operation. He concludes that, instead of surgical trauma, disturbances in metabolism, hyperparathyroidism, or lack of vitamins, it is the persistent or recurrent staphylococcal infection which is the most important cause of stone recurrence, and that this fact is due to the capacity of these organisms to split urea, causing formation of ammonia and a favorable reaction for the precipitation of alkali salts.

Physicochemical Mechanisms: Experimental methods under this heading come under two groups: (1) excessive excretion of oxamide, calcium oxalate, or calcium carbonate produced by ingestion of large quantities of these materials; (2) encrustation or impregnation of the urinary epithelium by crystalline matter, which is accomplished by urea-splitting organisms. The physicochemical principle explaining the formation of renal stones is that colloids form a gel in the renal pelvis, and simultaneously there occurs a precipitation of crystalline matter, which diffuses through this forming gel, resulting in a coalescence of the crystals, and thereby producing concrement formation. Keyser⁽¹³⁾, who supports this theory, is of the opinion that the form which the stone assumes is dependent on the set of the colloidal gel and on whether the crystallization begins from the center or from the periphery. Approximately thirty years ago Lichtwitz and Schade demonstrated that crystalloids (water insoluble) are kept in a state of dispersion in the urine by absorption to irreversible urinary protective colloids.

In experimental animals Keyser⁽¹⁴⁾ demonstrated that hyperexcretion of calcium oxalate produced a precipitation of octahedral, dumb-bell crystals, but that by further in-

12. Hellstrom, John: Significance of Staphylococci in the Development and Treatment of Renal and Ureteral Stones, Brit. J. Urol. 10:345-372 (December) 1938.

13. Keyser, L. D.: Newer Concepts of Stone in the Urinary Tract, J. Urol. 42:129-135 (September) 1939.

14. Keyser, L. D.: Recurrent Urolithiasis: Etiologic Factors and Clinical Management, J. A. M. A. 104:1299-1306 (April 13) 1935.

tensification of oxalate excretion there resulted a precipitation of fusing clusters of spheroidal crystals which formed concretions of calcium oxalate. The pH of the urine is an important factor in maintaining crystalloids and colloids in solution, and quite frequently determines the composition of the concrement. Amorphous and triple phosphates and carbonates are usually precipitated in alkaline urines, while the urates, oxalates, and crystalline phosphates are precipitated from acid urines. This fact explains the rationale of changing the pH of the urine by appropriate medication to the reverse of that in which the calculus formed. Some observers, particularly Butterfield⁽¹⁵⁾, believe that all stone forming individuals should have their urines kept distinctly acid, in view of the fact that alkalinity favors infection and infection favors stone formation. By and large, one may conclude that physico-chemical mechanisms do play an important part in the formation of crystalline stones, but, unquestionably, there are other factors in the etiology of recurrent urolithiasis.

Urinary Stasis: We are aware of the fact that stasis tends to render urine alkaline, which in turn favors infection and also encourages precipitation of salts. In many cases of recurrent calculi ureteral strictures, ureteral kinks, or extra-ureteral fibrous bands or aberrant vessels may be found. In cases of this type, serial pyelograms and excretory urography are invaluable in demonstrating either pre or postoperative lesions producing stasis. These factors may then be corrected by appropriate procedures. In a recent article on serial pyelograms⁽¹⁶⁾ I stressed the importance of this procedure in any type of hydronephrosis resulting from calculi, infection, aberrant bands or vessels, and neuromuscular dysfunction. Henline⁽¹⁷⁾, Moore⁽¹⁸⁾, Bray, Hawes and others are of the opinion that serial pyelograms give a more concise and accurate indication of urostasis than do excretory or intravenous urograms. Apparently urinary obstruction plus infec-

tion produces more recurrent stones than do all the other etiological factors combined.

Foci of Infection: In 1921 Rosenow and Meisser⁽¹⁹⁾ conducted a series of experiments establishing the relationship of streptococci and calculus formation. From 6 dogs the pulps of teeth were removed and streptococci which had been repeatedly isolated from the urine of a patient with typical attacks of renal colic due to stones were placed in the pulp chambers. These teeth were then sealed with impervious dental cement. The duration of the experiment ranged from eleven to one hundred and twenty-three days. Five of the 6 dogs developed calculi; the sixth dog died a few days after the experiment was undertaken. In four of the dogs there were bilateral calculi varying from small concretions to stones measuring 3 x 7 mm. and with a chemical composition similar to that of stones in human beings. These investigators were of the opinion that their experiments established the causal relationship between calculi and streptococci inoculated into an animal's teeth. In view of these findings, it behooves us to make a diligent search for foci of infection, such as the teeth, tonsils, prostate, cervix and colon, in all patients with urolithiasis. In a study of 100 cases of recurrent urolithiasis, Higgins found foci of infection in the prostate in 27 per cent, in the teeth in 11 per cent, in tonsils in 16 per cent, and in sinuses in 3 per cent. When such foci of infection are found they should be eradicated after removal of the calculus.

Metabolic Disorders

Hyperparathyroidism: In 1934 Chute⁽²⁰⁾ reported a case of hyperparathyroidism with a stone in a solitary kidney, and referred to 16 other cases which had been seen in the Massachusetts General Hospital. Albright and Bloomberg⁽²¹⁾ in 1934 reported 23 cases of hyperparathyroidism and renal disease, proven by operation, from the same hospital; they are of the opinion that stone formation in such cases belongs to that etiological group where the predisposing ab-

15. Butterfield, P. M.: Personal communication.

16. Hawes, G. A.: Serial Pyelograms in Nephroposis (Read before New York State Urological Association, April 26, 1939) North Carolina M. J. 40:222-230 (May) 1941.

17. Henline, R. B. and Bray, J. L.: Value of Serial Pyelograms in Hydronephrosis and Nephroposis, J. Urol. 38: 820-833 (December) 1937.

18. (a) Moore, T. D.: Value of Serial Pyelograph in Diagnosis, J. Urol. 28:437-451 (October) 1932.

(b) Moore, T. D.: Consideration of Ureter in Serial Pyelograms, South. M. J. 27:825-833 (October) 1934.

(c) Moore, T. D.: Limitations of Intravenous Urography, South. M. J. 29:242-248 (March) 1936.

19. Rosenow, E. C. and Meisser, J. G.: Nephritis and Urinary Calculi Following the Experimental Production of Chronic Foci of Infection, Preliminary Report, Collected Papers Mayo Clin. 13:253-256, 1921.

20. Chute, R.: Vital Importance of Relation of Hyperparathyroidism to Formation of Certain Urinary Calculi—and Its Remedy, New England J. Med. 210:1251-1253 (June 14) 1934.

21. Albright, F. and Bloomberg: Hyperparathyroidism and Renal Disease, Tr. Am. A. Genito-Urin. Surgeons 27:195-202, 1934.

normal factor is an excess of crystalloids in the urine. Albright, Baird, Cope, and Bloomberg⁽²²⁾ have also emphasized the relationship between hyperparathyroidism and the formation of renal calculi. Higgins reviewed 375 cases of renal concretions and found only one instance of hyperparathyroidism. Until July, 1939, there had been no cases of renal stones associated with hyperparathyroidism recognized in the Brady Urological Foundation. With this possible etiological factor in stone formation, we should routinely determine the calcium and phosphorus content of the blood plus the excretion of calcium in the urine of all cases of urolithiasis.

Vitamin A Deficiency: Today many drug firms are compelling both the physicians and the laity to become vitamin conscious. Higgins has stressed the importance of an adequate amount of vitamin A in the post-operative care of calculous cases. It has been shown by Steiner, Zuger, and Kramer⁽²³⁾ that vitamin A deficiency causes hyperplasia, then metaplasia and finally atrophy of the pelvic and ureteral mucosa; and that large plaques of desquamated epithelium form nuclei for the development of calculi, even when no gross or microscopic evidence of urinary tract infection exists. Higgins believes a biophotometer test, by a competent ophthalmologist, should be done on every patient with renal lithiasis, because of erroneous deductions from a dietary history. However, recently Steininger and Roberts⁽²⁴⁾ have compared biophotometer tests of 100 children from the University Laboratory school and 160 children from poor sections of Chicago and concluded that this test is not, at present, accurate enough as a means of diagnosing subclinical vitamin A deficiency.

Nevertheless, in view of the presumptive clinical and experimental evidence of the relationship between vitamin A deficiency and the formation of renal calculi, I am thoroughly convinced that all patients with urinary concretion should be given vitamin

A regularly for at least three years after removal of the stone.

Cystinuria and Oxaluria: The occurrence of cystin stones has been recognized well over one hundred years, and in 1916 Kretschmer⁽²⁵⁾ collected 107 cases of cystin concretions. Cystin is an amino acid, necessary for the maintenance of growth and soluble in alkaline solutions. In normal metabolism it is converted into urea and inorganic sulfate, which is excreted in the urine. However, in certain individuals there exists a faulty metabolism of cystin so that only part of the cystin is converted into sulfate, while the excess cystin is excreted in the urine, thereby producing cystinuria. If, in these cases, there is a sufficient excess of cystin crystals, a cluster of these crystals may coalesce to form a cystin stone. It is the general opinion among urologists that a marked alkaline urine prevents the precipitation of these crystals in the urine. Some observers have reported dissolution of cystin calculi by intense alkalization of the patient. There seems to be a definite hereditary factor in cystinuria, which should be investigated in patients with cystin calculi. It should be mentioned that many articles on cystin stones stress the fact that frequently these stones are non-opaque to x-ray. However, with improved x-ray apparatus and technique, probably most of these calculi can be demonstrated roentgenographically. Robert McKay⁽²⁶⁾ in 1936 called our attention to the possibility that in some cases reported as cystin calculi, the stones may not have been composed entirely of the pure chemical, thereby explaining the decreased density.

Oxaluria is not infrequently associated with an excessive intake of food with a high oxalic acid content, which produces an increased elimination of oxalates in the urine. Oxalic acid stones usually have a varying amount of calcium in them, so that these calculi are usually referred to as calcium oxalate stones. Almost invariably this type of stone is formed in an acid urine. This fact is quite important in the postoperative care, and the urine should be maintained at a pH of 7.0 or neutral. If the urine of such patients is shifted to the alkaline side, infection is favored and an alkaline calculus may be the recurrent type of stone. Ne-

22. Albright, F.; Baird, P. C.; Cope, O. and Bloomberg, F.: Studies on the Physiology of the Parathyroid Glands; 6. Renal Complications of Hyperparathyroidism. *Am. J. M. Sc.* 1:7:19-65 (January) 1934.

23. Steiner, M., Zuger, B., and Kramer, R.: Production of Renal Calculi in Guinea Pigs by Feeding Them a Diet Deficient in Vitamin A. *Arch. Path.* 27:104-114 (January) 1939.

24. Steininger, G. and Roberts, L. J.: Biophotometer Test as Index of Nutritional Status of Vitamin A. *Arch. Int. Med.* 64:1170-1176 (December) 1939.

25. Kretschmer, H. L.: Xanthin Calculi. Report of a Case and Review of the Literature. *J. Urol.* 38:183-193 (August) 1937.

26. McKay, R. W.: Cystin Stones. *South. Med. and Surg.* 93: 367-370 (July) 1936.



Fig. 1. A flat plate of an 18 year old Jewish male complaining of cloudy urine. Urinalysis showed many cystin crystals. After removal of the stones from the left kidney, the chemical analysis showed pure cystin.

ville⁽²⁷⁾ in 1936 published an article in which he stated his opinion that vitamin B deficiency and oxaluria were associated. However, up to the present time this concept has not been stressed by urologists in general.

Uric Acid and Xanthine: These products are the end result of the metabolism of nucleic acid, which is produced by the ingestion of purine substances (liver, brain, sweetbreads, kidney, mushrooms, etc.). Uric acid stones are much more common than xanthine calculi, possibly because uric acid is only a further oxidation product of xanthine. Kretschmer⁽²⁵⁾ in 1937 reviewed the literature and collected 15 cases of xanthine calculi, to which he added his case. From 0.4 to 1 Gm. of uric acid is excreted in the urine of the average individual daily. When there is an excess ingestion of purine substances, there results an excess excretion of uric acid in the urine, which favors the formation of uric acid stones.

Phosphaturia: The presence of phosphates in an alkaline urine is not an uncommon finding, and this factor alone is not

sufficient for the production of concrements. However, when there also exists a urea-splitting renal infection, which produces a strongly alkaline urine, then these factors are frequently associated with recurrent urolithiasis. Snapper has suggested that phosphaturia may be clinically eradicated by administering 2 Gm. of sodium benzoate three times a day, and that this may be important in preventing recurrent calculi in patients with urea-splitting infections.

Trauma: The time to begin the program for prevention of recurrence is at the operating table. Unnecessary handling and rough manipulation of the kidney is to be condemned. If one is dealing with calculi of the renal pelvis, the posterior aspect of the pelvis can be exposed by intelligent retraction and the calculus delivered through a posterior pyelotomy. There is one point which should be stressed in performing pyelotomy: the uretero-pelvic junction should be avoided in making the pyelotomy incision, for this is the most favorable site for a postoperative stricture to develop, with resultant urinary stasis. Usually when there is only a low grade renal infection, the muscle layers of the pyelotomy incision are closed with 0000 chromic catgut sutures on an atraumatic needle. The pelvic mucosa is never sutured, lest encrustation or precipitation of calcium on the suture might form a nucleus for a recurrent stone. When pronounced renal infection is present nephrostomy is the procedure of choice in order that free drainage may be established. Since the advent of ribbon gut, nephrostomy has been used more frequently because hemorrhage can be controlled and there is less destruction of parenchymal tissue. When the pelvis is intrarenal or inaccessible at the time of operation, it is usually best to remove the calculus by nephrolithotomy and establish adequate urinary drainage.

Twinem has pointed out the advisability of performing a calycelectomy when dealing with a poorly draining dependent calyx where the calculus apparently originated. This is easily accomplished by sharp dissection of a wedge-shaped portion of renal tissue overlying the diseased calyx, and removal of the calyx by a small bone rongeur. A nephrostomy tube is inserted in the renal pelvis, a piece of fat placed in the kidney wound for hemostasis, and the true renal capsule approximated with ribbon gut.

27. Neville, D. W.: Constitutional Factor in Oxaluria, *Urol. and Cutan. Rev.* 39:32-33 (January) 1935.

In cases of staghorn calculi with renal infection and diminution of function, the financial status of the patient should be considered in determining the best method of management. In patients who can afford repeated hospitalization if necessary, a wide nephrolithotomy and nephrostomy may be employed, in spite of the frequency of recurrence (40 per cent in Twinem's series). With patients in the lower income bracket it is probably advisable to perform a nephrectomy, so that they may return to their work as soon as possible.

Summary of Postoperative Care

It is quite important to begin the prevention of recurrences at the operating table. Unnecessary handling of the kidney is to be condemned. After the operation the following specific measures should be instituted:

1. The general physical condition of the patient should be maintained at the highest level. Blood counts should be made frequently, and the hemoglobin kept above 90 per cent.

2. Extra-urinary foci of infection should be eradicated.

3. Careful analysis of the removed calculus should be made, so that the patient may be placed on a proper diet.

4. If hyperparathyroidism is demonstrated, removal of the tumor is definitely indicated.

5. Immediate postoperative roentgenograms should be made to exclude pseudo-recurrences.

6. Frequent bacteriological studies of the urine from both kidneys should be done, and urinary infections combatted. The use of the ketogenic diet, methenamine, mandelic acid, sulfanilamide and its related compounds, and neosalvarsan depends on cultural identification of the offending organism.

7. Intermittent ureteral dilatation and renal pelvic lavage should be done to insure free urinary drainage. Occasionally surgical drainage of the involved kidney is necessary.

8. Vitamin A should be administered.

9. Patients with alkaline stones should be kept on a Higgins high vitamin A acid ash diet. The urinary pH of the involved kidney should be maintained below 5.2, by diet, ammonium chloride or dilute hydrochloric acid.

With calcium oxalate stones a low oxalate diet is necessary.

10. Uric acid and cystin calculus cases should have their urines kept alkaline, by using the alkaline ash diet plus alkalinizing drugs. A diet low in purines is also indicated when dealing with uric acid stones.

11. The patient should determine the pH of his urine daily.

12. An x-ray should be made every four to six months for a period of three years after removal of the calculus.

Conclusions

The literature pertaining to recurrent urolithiasis has been carefully reviewed and summarized. The etiology of recurrent stones has not yet been finally solved. Further experimental and clinical work needs to be done in this field. The importance of producing a minimum amount of trauma at the operating table has been emphasized. The dietary management of these cases is stressed. The postoperative measures have been outlined, and should be followed in every case of urolithiasis.

THE PRESENT STATUS OF THE MALE SEX HORMONE

FRED K. GARVEY, M. D.

WINSTON-SALEM

For ages man has attempted male sex gland therapy⁽¹⁾. The earlier attempts were, of course, empirical. As early as 1678 Leuwenhoek described a substance from the testes as "spermin." In 1776 Bordeu compared the castrate capon to the eunuch and attributed sex development and sex characteristics to the testes. In 1849 Berthold demonstrated that the caponizing effects of castration in a rooster were overcome by re-implantation of testicular tissue. In 1850 Franz Leydig described the interstitial cells of the testicle, which were thereafter known as Leydig's cells, and claimed that large numbers were present in the four-months-old embryo, while fewer were present in the embryo at birth. He also found that they were abundant at puberty and diminished during the male climacterium. It was thought that these could be stimulated by

¹Read before the Eighth District Medical Society, Winston-Salem, April 18, 1941.

1. Eidelberg, D. Joseph: Male Sex Hormone, Clin. North America, 22:1537 (September) 1938.

the gonadotropic hormone of the anterior pituitary gland. In 1889 Brown-Sequard claimed that he had rejuvenated himself by using extracts from dog and guinea-pig testes. In 1903 Bouin observed that ligation of the vasa deferentia in animals stopped spermatogenesis, but caused proliferation of the interstitial cells. Biedl in 1916 stressed the knowledge that epididymal disease and atrophy of the seminiferous tubules do not affect sex impulses or secondary sex characteristics, nor cause a retrogressive change in the organ or its function. Walker in 1908 produced comb, wattles, and sex behavior in capons by injecting extracts of testes.

Effect of Castration

Castration has a profound effect on the sexual development in birds and mammals. It prevents mature development of accessory sex organs. In young boys it retards ossification of the epiphyses of the long bones, increasing stature, and produces feminine adiposity, high-pitched voice, lack of beard, infantile genitalia, and suppression of sexual feeling. The pituitary gonadotropic hormones are increased in the blood and urine. The pituitary gland itself is enlarged. In animals, reimplantation of gonadal tissue or the injection of extracts changes the pituitary picture to normal. Castration in the male or female causes increased output of gonadotropic hormones, with excessive amounts in the blood and urine. This occurs at menopause, and also in the male climacterium. These effects are decreased by potent testicular extracts.

Recently there has been a standardization of the male sex hormones. Gallagher and Koch⁽²⁾ described a unit as "that amount which, injected per day for five days, produces an average of five millimeters' increase in length and height of combs on at least five brown Leghorn capons." This is commonly known as a capon unit. In 1931 Butenandt obtained a pure crystalline male hormone from human urine. It was called androsterone. Gallagher and Koch⁽²⁾ later obtained substances from testis tissue ten times as potent. In 1935 Laquer obtained from the testis crystals of exceptional potency, called testosterone. This has since been synthesized in the laboratory from

cholesterol, and its combination with propionic acid has resulted in the production of testosterone propionate, the product in common usage today. If used early enough, testosterone propionate will counteract the effects of castration. It also has some theelin-like effect in the female. Conversely, male urine and testes contain estrogenic substances. In both sexes, certain ratios exist between androgenic and estrogenic substances, and in various pathological states, such as homosexuality, virilism, masculinization, feminization, hypertrichosis, etc., they become imbalanced because of a deviation from these ratios. There is conclusive evidence that a delicate balance exists between the anterior pituitary lobe and the testis. The pituitary stimulates activity of the testis, which in turn serves as a check on the pituitary itself. There are two gonadotropic hormones of the anterior lobe of the pituitary. One causes development of the follicles of the ovary and influences the seminiferous tubules of the testis—the so-called follicle-stimulating hormone. The other hormone causes luteinization of the follicles in the ovary and influences the activity of the interstitial cells in the testis—the so-called luteinizing hormone. Menopausal and castrate urines contain mainly the follicle-stimulating material, while pregnancy urine contains largely the luteinizing factor, under various trade names such as A.P.L., antuitrin S, and follutein. The serum of the pregnant mare contains a gonadotropic material which has both factors. Two types of hormone therapy are now possible in hypofunction of the testis: first, stimulation therapy with gonadotropic material; and second, substitution therapy with the male sex hormone. With gonadotropic material the testis is stimulated to increased activity, itself producing more sex hormones. This is to be preferred in most instances where the testicle is capable of responding to stimulation. Examples of indication for the stimulation therapy are Froehlich's syndrome, hypopituitarism with secondary hypogonadism, and undescended testis. Substitution therapy with the male sex hormone is indicated when the testicle is not capable of producing the hormone in sufficient quantity. Among the indications for its use are eunuchism, eunuchoidism, and atrophy or destruction of the testis.

2. Gallagher, T. F. and Koch, Fred C.: Quantitative Assay for Testicular Hormone by Comb Growth Reaction, *J. Pharm. and Exper. Therap.* 3940:327 (September) 1930.

Clinical Application

The value of the male sex hormone is shown best by its effect on individuals with complete lack of testicular function—namely, castrates and eunuchoid individuals⁽³⁾. Bilateral intra-abdominal cryptorchidism beyond the age of puberty produces much the same condition, as the interstitial cells are involved in the atrophy. Eunuchoid individuals are tall and slender, with long extremities and narrow shoulders and chests. The voice is high-pitched, and the person is shy, effeminate, and high-strung. There is little pubic hair and no beard nor hair on the chest, abdomen, arms, or legs. The genitalia are infantile, the prostate is not palpable, and the muscles are small and feminine in type. In contrast to the Froehlich type, such patients are underweight and have no breast development. Eunuchoidism, therefore, illustrates testicular deficiency *per se*, in contrast to secondary hypogonadism in Froehlich's syndrome. Its treatment, therefore, is that of substitution, and requires large doses of testosterone propionate. Treatment produces the following effects: (1) The gradual appearance of the secondary sex characteristics of the adult male—namely, enlargement of the penis and scrotum, development of the prostate, and masculine distribution of the hair. The voice assumes its masculine quality. Erections and seminal emissions occur, and priapism has been described. (2) Marked increase in appetite and weight, with marked muscular increase. This change is very dramatic. (3) Increase in basal metabolic rate. (4) An increase in vigor and sense of well-being, with increased initiative for work, both mental and physical. (5) A loss of feminine characteristics. Intensive therapy is necessary for one to two years, and maintenance therapy for the rest of the patient's life. In the eunuchoid state due to bilateral abdominal cryptorchidism, it is desirable to begin treatment just before normal puberty, or at the age of 11, to prevent the abnormal skeletal development characteristic of the eunuch.

Froehlich's Syndrome: In Froehlich's syndrome the therapy should be that of stimulation preferably. Large doses of the gonadotropic factor from pregnancy urine are very effective in this condition. Gonadotropin, found in pregnant mare's serum,

may also be highly effective. If the testes do not respond to stimulation, then testosterone propionate may be used.

Undescended Testicle: Within recent years much has been written on the use of hormones in cryptorchidism. Many reports of their use in such cases have been published, with results varying from a large percentage of descent in some series to practically none in others. It is likely that our enthusiasm for a new type of therapy has led us to expect too much of a not-too-well-understood method of treatment without having a proper understanding of the factors involved and without a proper selection of cases. This probably accounts for the great divergence of opinion as to results obtained. Cryptorchids can be classified into three general groups: (1) those presenting associated endocrinal pathology such as Froehlich's syndrome; (2) those with fixed, mechanically retained testes; and (3) a group in which the testes are definitely movable in the inguinal canal and in some instances may be manipulated into the scrotum. This latter group comprises about 25 per cent of the cases, and it is probable that in the majority of these the testicles would descend at puberty unaided by hormone therapy. The first group, which is associated with hypogonadism, responds better to treatment than either of the other two, and it is probably the only one with a direct indication for hormone therapy. The substance of choice to be used in the treatment of undescended testicle is the anterior pituitary-like principle of pregnancy urine⁽⁴⁾. This works by stimulating the interstitial cells of the testes to produce male sex hormone, which in turn causes descent in about one-fourth of the cases in young boys. The same results may be produced with testosterone itself, but testosterone has been shown by various investigators⁽⁵⁾ to produce injury to the seminiferous tubules, temporarily at least, with deficiency in both quantity and quality of sperms. A word of caution must be given against the indiscriminate use of hormone therapy even if the cases are properly selected, because of the fact that both anterior pituitary lobe substance and testosterone may cause excessive genital growth⁽⁵⁾ in young boys and

4. Cohn, Samuel: Anterior Pituitary-like Principle in the Treatment of Maldevelopment of the Testicle, J. A. M. A. 103: 103 (July 14) 1934.

5. McCullagh, E. Perry: Treatment of Testicular Deficiency with Testosterone Propionate, J. A. M. A. 112:1037 (March 18) 1939.

3. Thompson, W. O. and Heckel, N. J.: Male Sex Hormone, J. A. M. A. 112:1224 (December 9) 1939.

stimulate an increased rate of skeletal growth⁽⁵⁾. Many cases have been reported of boys 5 to 10 years of age where prolonged treatment has produced precocious puberty, with external genital changes of adult proportions. Sex hair growth has been induced and voice changes, erections, and seminal emissions stimulated. From most authentic reports one gathers that if descent is to be produced, it will be effective within two or three months of therapy. I have recently seen a case of marked puberal precocity in a boy aged 12, from therapy carried out over a period of more than a year. It will be interesting to see whether this will be followed by a retardation of growth as adolescence approaches. The following rationale of treatment is generally accepted: (1) A careful examination is made to determine whether the testis is undescended or merely retracted. (2) Treatment should be started preferably between the ninth and eleventh years of age. Exceptions to this are complications such as hernia and patients with definitely hypoplastic genitals. In the latter, if therapy is prolonged, it is important to watch for precocious bone maturation. (3) Antuitrin S is used in a dosage of 200-400 rat units two or three times weekly until 4,000 rat units have been administered. If at the end of such a course only partial descent occurs, the course may be repeated in six months. If there has been no change at all in the position of the testes, operation is advised.

Benign Prostatic Hypertrophy: In 1932 Lower and McCullagh⁽⁶⁾ became interested in a hypothesis that glandular imbalance may be a cause of prostatic hypertrophy and that a nonsurgical type of treatment might be worked out for the relief of this condition which so commonly occurs in men past the age of 50. The origin of hormonal treatment in prostatic hypertrophy was the observation made many years ago that eunuchs and other castrates never had prostatic enlargement. This led to the advocacy of orchectomy and later to the ligation of the vasa deferentia to effect shrinkage of the enlarged prostate. No explanation could be offered for the rationale of such a procedure. Lower's new interest in the relationship of the endocrine glands and prostatic hypertrophy hastened animal experimentation and research which laid the foundation for male

hormone therapy in this condition. He showed in experiments on rats that the testicle possesses a dual endocrine function: that the seminiferous tubules excrete, first, a water-soluble hormone during the active sex period of the male called "inhibin"; and second, an oil-soluble hormone known as testosterone. As old age approaches, inhibin, which inhibits the effect of the pituitary gland, is the first hormone to give out because of atrophy of the germinal epithelium. It is thought by Moore and others that the interstitial and germinal hormones act as complements to each other. The clinical application of these experiments is the use of inhibin in the treatment of prostatic hypertrophy. Other experimenters believe that prostatic hypertrophy is due to changes in the estrogenic-androgenic ratio, and their experiments lead them to believe that testosterone can prevent prostatic hypertrophy or produce atrophy of an already hypertrophied prostate. Lower claims marked relief of subjective symptoms in 50 to 66 per cent of cases treated with inhibin, but claims no marked change in the size of the gland or lessening of the residual urine. Laquer and others report encouraging results from the use of testosterone on the basis of estrogenic-androgenic ratio. Still others believe that the relief of symptoms is due to increased muscle tonus of the body generally. There seems to be no unanimity of opinion as to the value of hormonal treatment in prostatic hypertrophy, and surgery still is the final resort in the large majority of cases. There probably is no doubt that this condition is brought about largely by endocrine imbalance, and it is believed that in the near future a proper understanding and therapy will be worked out.

The Male Climacteric⁽⁷⁾: There is a reasonable basis for the belief that many, if not all men pass through a climacteric period similar to that of women, usually in a less severe, but perhaps more prolonged form. The cessation of menstruation in the female has been known for ages to indicate not only the end of the child-bearing period, but a decline in her sex function. It represents only a visible evidence of endocrine imbalance. There is also a decline of sex function in men, which means a decline in gonadal function, that comes on at a little later period in life than that occurring in women. The

6. Lower and McCullagh, quoted by Meltzer, Maurice: Male Hormone Therapy of Prostate Hypertrophy, *Journal-Lancet*, 59:279 (June) 1939.

7. Werner, A. A.: The Male Climacteric, *J. A. M. A.* 112:1441 (April 15) 1939.

average age of onset in men is approximately 48-52 years. The climacteric symptoms in men may be classified, as in women, as nervous, circulatory, and general in distribution. The more prominent symptoms are subjective, such as nervousness and emotional instability, characterized by irritability, moodiness, decreased memory and ability for mental concentration, decreased interest in the usual activities, a desire to be left alone, and attacks of depression. There may be neurocirculatory changes, such as hot flashes accompanied by profuse perspiration or followed by a chilly sensation. There may be tachycardia and palpitation, vertigo, numbness and tingling of the extremities, fatigability, and disturbed sleep. These climacteric disturbances may be so severe in some men as to cause despondency and psychoses, with thoughts of self-destruction. It is probable that suicide has been the result of such disturbances in many cases. Involutional melancholia is known by psychiatrists to occur in men, and institutions contain many of such cases.

Testosterone has been remarkable in its effect on patients with this condition. Within a short time under adequate treatment there is remarkable clinical improvement characterized by increase in feeling of well-being, a return of normal sex function, and great changes in the entire mental attitude of such patients. Despondency gives way to a feeling of buoyancy, and there is a new feeling, both mental and physical, of aggressiveness, with less irritability and brooding. Nervousness and emotional instability are replaced by greater stability and control. There is less fatigue, as evidenced by new energy and stamina.

Impotence: Probably the most common abuse of the male sex hormone has been its promiscuous use in attempting to relieve impotence. Since it is of value chiefly in substitution therapy⁽²⁾, it can only be effective when there is deficiency of testicular function. There are very few conditions where it would be indicated. The majority of cases of impotence during the sexual age are psychogenic in origin. Others, of course, are due to sexual fatigue. The former require psychotherapy, while the latter require proper rest and a more rational conception of masculine prowess. There are, however, cases of impotence occurring between the ages of 45 and 55 which may be classified in

the climacteric group and which by the administration of testosterone in adequate doses over a period of many months may be restored. The most gratifying and definite effects have been noted with the administration of 10 to 20 mg. of testosterone weekly to this group.

Other Uses of Testosterone⁽³⁾: There are other clinical uses for testosterone claimed by many writers with which I have had no experience, notable among which is its use in the female. This therapy is based on the bisexual properties of testosterone and the normal existence of androgenic substance in the female. It is claimed that gratifying results have been obtained in the menopausal syndrome, in metrorrhagia, in dysmenorrhea, and in inhibiting postpartum lactation and postpartum pains. Its use in such conditions is certainly outside the realm of urology and cannot be properly discussed in this paper. Its mention at this time is merely to emphasize the existence of a puzzling and definite interrelationship of male and female endocrines, the understanding of which certainly is in its infancy. Truly, one of the greatest fields in medicine will be developed when the mystery of the endocrine system has been unveiled. Then the male sex hormone will undoubtedly play an important role in future glandular therapy.

S. Ciba Pharmaceutical Products Co., Inc.: Perandren in the Treatment of Males and Females.

Squibb Introduces Product For Simultaneous Immunization Against Diphtheria and Whooping Cough

The first preparation for simultaneous immunization against diphtheria and whooping cough to be made available commercially in this country is now offered by E. R. Squibb & Sons, New York, in Diphtheria Toxoid Alum Precipitated—Whooping Cough Vaccine Combined Squibb. Each 1 cc. of the combination product contains a full immunizing dose of Diphtheria Toxoid Alum Precipitated and 10,000 million killed *Bacillus (hemophilus) pertussis*.

To be on the safe side, it is suggested for the present that three or four injections of 1 cc. each of Diphtheria Toxoid Alum Precipitated—Whooping Cough Vaccine Combined Squibb be given at monthly intervals. This will confer a high degree of immunity to diphtheria and should afford adequate protection against whooping cough. Immunization is recommended for all children over six months of age.

Diphtheria Toxoid Alum Precipitated—Whooping Cough Vaccine Combined Squibb is supplied in 5 cc. vials containing sufficient vaccine for five injections.

SOME FEATURES OF "VIRUS PNEUMONIA"

JOHN MOSS, M. D.

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During the past few years a number of clinicians have reported cases of an atypical form of pneumonitis, at times occurring in isolated instances, and again assuming epidemic proportions. Many of these cases have conformed to a more or less definite clinical pattern and have presented striking features which serve to differentiate them from the more familiar forms of bacterial pneumonia. Although no etiological agent has been determined with certainty, it is felt that the disease is probably due to infection by a filtrable virus^(1, 2).

Certain articles in the recent literature—notably those of Reiman and Havens⁽¹⁾, Longcope⁽²⁾, Kneeland and Smetana⁽³⁾, and Murray⁽⁴⁾—are worthy of particular mention because of the thorough descriptions of the clinical features of "virus pneumonia" in relatively large numbers of cases. Despite the reports of these and other authors, and despite the incidence of the disease, many times the isolated case remains unrecognized until several days have passed. This failure to recognize the disease early may result in the employment of faulty isolation technique, with consequent cross-infection which may at times reach severe proportions. Erroneous diagnosis may also lead to improper therapy.

The following three cases serve to re-emphasize the clinical features of "virus pneumonia", and illustrate the possibility of cross-infection.

Report of Cases

Case 1: E. W., a college student, aged 20, was admitted to Duke Hospital on October 4, 1941, with the complaint of a "cold in the chest" for the past twenty-four hours. His family history was of no significance. His past history was of interest in that he had had Type III pneumococcal pneumonia in 1938, with uneventful recovery after treat-

ment with specific serum and one of the sulfonamide drugs. Two weeks before the onset of his illness a routine tuberculin test was negative.

Approximately twenty-four hours before admission the patient "caught cold", associated with headache and rhinorrhea. Shortly after this he developed a rasping, non-productive cough. There was no chest pain, chill or respiratory distress. The morning of admission to the hospital, eighteen hours after onset, he felt "chilly" and ill with moderate weakness.

On admission the patient's temperature was 39.1 C. (102.4 F.), the pulse 100, respirations 20 and blood pressure 118 systolic, 70 diastolic. He was a well developed and well nourished white male who appeared moderately ill. He was alert and well oriented. The skin was hot and moist but of good color and texture. There was no generalized enlargement of the lymph nodes, but a few small cervical nodes were palpable bilaterally. Examination of the head, eyes and ears showed nothing remarkable. There was a slight mucoid nasal discharge. The mucous membrane of the pharynx was inflamed, but there was no exudate. Examination of the lungs showed a small area of dullness to percussion posteriorly just beneath the angle of the left scapula, with suppressed breath sounds over the same area. There was no friction rub, and no rales were heard. The remainder of the physical examination showed nothing of significance.

The following admission laboratory data were obtained: hemoglobin, 15.7 Gm.; red blood cell count, 5,080,000; and white cell count, 9,400. The differential white cell count was 70 per cent segmented neutrophils, 10 per cent non-segmented neutrophils, 1 per cent monocytes, 3 per cent large lymphocytes and 16 per cent small lymphocytes. Examination of the urine showed nothing abnormal. A moderate degree of consolidation in the left lower lobe of the lung was revealed on x-ray examination.

The patient's course in the hospital is of interest. Before chemotherapy was instituted a throat culture was taken which showed alpha streptococci and *Neisseria sicca*. A blood culture was reported five days later as sterile. A small amount of sputum was raised with difficulty and culture of this material was reported as showing numerous colonies of alpha streptococci and an oc-

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1. Reiman, H. A. and Havens, W. P.: An Epidemic Disease of the Respiratory Tract, *Arch. Int. Med.* 65:138-150 (January) 1940.
2. Longcope, W. T.: Bronchopneumonia of Unknown Etiology, *Bull. Johns Hopkins Hosp.* 67:268-305 (October) 1940.
3. Kneeland, Yale, and Smetana, H. F.: Current Bronchopneumonia of Unusual Character and Undetermined Etiology, *Bull. Johns Hopkins Hosp.* 67:229-267 (October) 1940.
4. Murray, M. E.: Atypical Bronchopneumonia of Unknown Origin, *New England J. Med.* 222:565-573 (April 4) 1940.

casional colony of beta hemolytic streptococcus. No pneumococci were seen on direct smear, and the mouse inoculated with the material was alive and well at the end of twenty-four hours.

Two hours after admission the patient was given 2 Gm. of sulfathiazole, and thereafter he was given 1 Gm. every four hours. Ten hours after sulfonamide therapy was begun his temperature began to fall, and after eighteen hours of treatment the temperature was normal. Twenty-four hours after admission, however, the temperature rose steadily to 40 C. (104 F.) and thereafter fluctuated between 38.6 C. (101.5 F.) and 40.2 C. (104.4 F.) for thirty-six hours. Throughout the febrile phase of the illness there was a relative bradycardia, the pulse ranging between 80 and 100; even when the temperature was highest the pulse rate was 102 to the minute. Because of the relative bradycardia it was felt that some of the patient's temperature might be due to sulfathiazole. Just before discontinuation of the drug, however, the temperature fell to normal spontaneously, and even after discontinuation of the drug the temperature fluctuated between normal and 39.4 C. (103 F.) for three days.

On the third hospital day x-ray showed some clearing of the pneumonic process at the left base. The patient appeared somewhat better clinically and did not complain so bitterly of the headache which had been a prominent feature from the outset. The harassing, paroxysmal cough which was present on admission persisted, however; and only on occasion was he able to produce a small amount of mucopurulent sputum. Repeated studies of this material were negative for acid-fast organisms and the routine cultures and mouse inoculations failed to show any pneumococci. Three subsequent blood cultures showed no bacterial growth.

On the sixth hospital day, as the temperature was falling by lysis, the white cell count was reported as 9,100 with essentially the same differential as previously. Two subsequent leukocyte counts were 8,700 and 8,900. At no time was the white cell count as high as 10,000.

On the seventh hospital day the physical signs in the left chest had disappeared, but scattered rales were heard throughout the right chest. X-ray at this time showed a distinct change, in that the previously de-

scribed localized area of consolidation on the left was broken up into a patchy consolidation and there was now a marked spread throughout the right lung, where there was a patchy consolidation which tended to follow bronchovesicular distribution. There was no appreciable change in the patient's clinical condition coincident with the spread of his pneumonia. After the eighth hospital day his temperature did not exceed 37 C. (98.6 F.) at any time. He remained in the hospital for ten days after becoming afebrile, and during that time there was gradual improvement. His cough, which had never been very productive, gradually subsided. On the eighteenth hospital day he was discharged symptom-free except for some residual weakness. A chest plate taken four days before discharge showed that the pneumonic process had practically cleared.

The patient was seen three weeks after discharge from the hospital. At this time he was well and a tuberculin test was negative.

Case 2: I. W., a nurse, aged 22, was admitted to the hospital October 20, 1941. Three days before admission and thirteen days after nursing E. W. (case 1), she developed generalized aching and malaise. The following day she felt feverish and developed a cough productive of small amounts of mucopurulent sputum. When she was admitted to the hospital the next day her physical examination was essentially normal, although x-ray showed an area of infiltration in the right upper lobe of the lung. Sputum studies were repeatedly negative for acid fast organisms, and although there were a few pneumococci present in the sputum, the type could not be determined directly or by mouse inoculation. On admission the white blood cell count was 9,000, and although the count was repeated on several occasions it was never above this figure. A blood culture was sterile.

The patient's temperature on admission was 38.2 C. (100.8 F.). She was started on sulfadiazine immediately, but for four days her temperature fluctuated between normal and 39.6 C. (103.3 F.); after that it fell by lysis and remained normal throughout her hospital stay. On the fifth day a number of coarse, moist rales were heard over the area of pneumonitis, and at this time x-ray showed a diffuse, scattered mottling in the right upper lobe. From this time on the patient improved rapidly. She was dis-

charged on the sixteenth hospital day, at which time x-ray showed her lungs to be clear.

Case 3: C. S., a nurse, aged 18, was admitted to the hospital on October 24, 1941, seventeen days after her first exposure to E. W. (case 1) in the course of her nursing duties. For the past three weeks she had experienced a mild cough productive of small amounts of mucopurulent sputum, but despite this she had felt well. Two days before admission she felt "chilly" and feverish. The following day her temperature was found to be 38 C. (100.4 F.), and she went to bed. The next day she felt no better and was admitted to the hospital. Her temperature on admission was normal and the physical examination negative except for a few palpable cervical lymph nodes and an injected pharynx. The white blood cell count was 6,900.

Shortly after admission her temperature suddenly spiked to 40.5 C. (104.9 F.) without chill. At this time her chest was clear to physical examination, but x-ray examination of the chest showed a homogeneous density extending from the hilum to include the left lower lobe of the lung. The white cell count at this time was 6,000, a blood culture was sterile, and the small amount of sputum showed a mixed flora without pneumococci.

The patient was started on sulfadiazine, but her temperature ranged between 37 C. (98.6 F.) and 40.6 C. (105.1 F.) for five days, after which it dropped by lysis and remained normal. The day after the appearance of the lesion by x-ray an area of corresponding dullness to percussion was noted on physical examination, and over the same region there were many fine and coarse rales.

Following the fall in temperature the patient improved rapidly, and was discharged on the fourteenth hospital day. On discharge x-ray showed the lungs to be clear.

Discussion

These three cases possess certain common features which deserve emphasis. In all three the onset was characterized by a harassing, at times paroxysmal cough, which was either non-productive or productive of only small amounts of mucopurulent sputum. There was no accompanying pleurisy. Bac-

teriological studies of the scanty sputum and of the blood failed to demonstrate the etiology of the disease. In all three patients repeated white blood cell counts were normal or only slightly elevated.

The temperature in all three cases was rather high during the first few days of the disease, and in each there was an accompanying relative bradycardia, until the temperature fell by lysis on the fifth to seventh day. In two of the three patients no physical sign of pneumonia was demonstrated until the lesion had been diagnosed by x-ray. Physical signs were, when present, those of incomplete consolidation which corresponded to the patchy, migrating lesions demonstrated by x-ray.

In each instance the disease was refractory to sulfonamide therapy. What part the sulfonamides played in preventing secondary bacterial infection is a matter of speculation.

Although deaths in "virus pneumonia" have been reported, for the most part the disease runs a relatively benign course. These three patients were never considered seriously ill. Kneeland and Smetana⁽³⁾ reported one death in fifty-two cases, while Longcope⁽²⁾ reported two deaths in thirty-two cases. Both of the patients reported by Longcope had pre-existing heart disease.

The communicability of the disease is well attested by the three cases presented. In Longcope's series twelve of the thirty-two patients had been in direct contact with other patients suffering from the same form of pneumonia. Reiman's cases occurred in epidemic form among a hospital personnel. These reports indicate the high incidence of cross-infection.

Conclusions

(1) Three cases presenting the clinical picture of "virus pneumonia" are reported. Cases 2 and 3 probably represent cross-infection from Case 1.

(2) The disease is probably a distinct entity, the clinical features of which are constant enough to permit recognition during the first few days.

(3) The disease is highly communicable.

(4) Sulfonamide therapy does not affect the primary course of the disease, although such therapy is indicated in an effort to avoid secondary bacterial infection.

(5) For the most part the disease runs a relatively benign course, although there are a number of reported deaths.

OCCUPATIONAL DERMATOSES

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and

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The recognition of occupational skin diseases comprises a very important field in medical practice. Occupational dermatoses make up 65 to 70 per cent of all disabling diseases to which manual workers are subject. More attention has been focused upon accidents and the inhalation of noxious fumes because of the deaths and loss of limbs caused thereby, but the most important disease from the standpoint of time lost is certainly occupational dermatitis. There is a widespread lack of information concerning the etiology and possible preventive measures in occupational skin disease. It is interesting to note that although the number of claims for compensation due to industrial diseases in the state of North Carolina have been increasing yearly in proportion to the number of persons employed, the number of days' work lost in the average case has been steadily decreasing. This may indicate that the treatment has become more effective, or that industrial diseases are being seen and diagnosed earlier; but it is evidence also that little or no progress has been made in the prevention of such diseases.

Occupational dermatoses are those diseases of the skin which are due wholly or in part to noxious agents encountered during employment, and they include industrial dermatoses which are limited to manufacture and mining. The legal elements involved in proving or disproving that the disease in point is, or is not, due to hazards encountered during employment are not within the scope of this discussion. We shall confine ourselves to the consideration of (1) the diagnosis and the best available methods of proof of the occupational nature of a derma-

tosis, and (2) the best known means of preventing occupational skin disease.

Diagnosis

In general, an occupational dermatosis is limited to the exposed areas—the hands, the face, the neck, and the ankles. It presents in its various stages manifestations ranging from a simple erythema over a small area to large, thick, and painful callosities. It is important that the actual working conditions of each patient be known before interpretation of any presenting lesion be attempted. Fortunately most occupational dermatoses fall into two groups: (1) traumatic and (2) contact. An element of both groups enters into some dermatoses.

The etiology of the traumatic type of skin disease—exemplified by the callosities of tool workers, and the horny thickening with atrophy in the potter's left hand—is generally made apparent by the history. The etiology of the contact type is less obvious, but it commonly begins as an erythematous and vesicular eruption limited early in its course to the areas exposed to the offending agent or agents. This group is typified by the vesicular, fissured eruption of the hands in toolmakers, which is due to cutting oils, and by the erythematous, swollen, and vesicular dermatitis of workers in volatile substances such as trinitrotoluol in the manufacture of some explosives. A follicular and pustular eruption is frequently seen in petroleum industry workers, especially about the forearms and other hairy parts. Each industry and occupation presents a problem peculiar to itself. The climate, the environment within the plant, the general health and nutritional state of the employee, as well as the occupation enter into the etiology of a dermatitis. The worker whose hands are continually wet, or who sweats profusely, may be intolerant of an ordinarily innocuous substance. The softening of the horny layer of the skin breaks down an important barrier to infection and irritation, so that oils, soaps, fumes, and perspiration, as well as actual trauma, may permit substances which ordinarily are not irritants to produce an injury to the skin. For this reason it may be very difficult to reproduce or to explain satisfactorily any given dermatosis unless the patient is observed under conditions which originally produced the skin disease. Dust in the air, dirt, heat and cold, all may be important.

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.

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A diagnosis of occupational dermatosis may safely be made if the following conditions are met:

- (1) The disease occurs during employment.
- (2) The disease tends to clear up when the patient is away from his work.
- (3) The disease reappears when the employee resumes working under the same conditions.
- (4) Other workers doing the same work present similar diseases.
- (5) The disease may be reproduced or simulated when the worker is exposed to the offending agent by the "patch test".
- (6) Other possible causes, such as irritants from hobbies, work in the home, or other diseases can be excluded.

Those dermatidides primarily due to exposure to irritating substances generally respond readily to local therapy and rest, away from the occupational hazard. However, in cases with previous exposure, in which a hypersensitivity develops, the resultant dermatosis may be exceedingly difficult to control, and indeed, may have a course of two to three years. This group of cases should be prevented by early recognition of the cause of the dermatosis. A photographer's assistant presenting a localized eruption on the hands was found upon patch testing to be so sensitive to "metol" that it produced a mild generalized eruption lasting a few days. When he recovered he resumed his work, and instead of a localized eruption he developed a severe generalized and exfoliating type of eruption which persisted for five months. This type of hypersensitivity is relatively common and should be carefully looked for so that the employee may avoid re-exposure.

The patch test is, within certain limits, a valuable means for determining hypersensitivity. Briefly, it consists of applying to the skin in dilute form under a protective covering the substance which is suspected of being the primary cause of a dermatitis. This is permitted to remain in contact with the skin for twenty-four hours, and if the reaction is positive an irritation will be observed at the end of this time. A positive reaction does not, however, prove that the substance used for the test is entirely responsible for the dermatitis in question. The

substance used in the test may be a primary irritant, and as such it will produce an eruption whenever a worker is exposed to it. If the test is negative it may mean that environmental conditions at the place of employment are partly responsible, and a combination of environment and irritant may be needed to produce a positive test. This is frequently impossible to obtain. It is also known that a previous sensitization to one substance may provoke a cutaneous reaction to another by synergistic action. By and large, however, when employed with the suspected irritant suitably diluted, and with two or more controls, the patch test is strong evidence that the substance causing a reaction is the offending agent.

In summary, the diagnosis of occupational disease rests upon a history of exposure to possible irritants, with occurrence of similar lesions in other workers employed under the same conditions, and the clearing of such eruptions when the patient remains away from the suspected substance. The reproduction of the eruption by means of the patch test strengthens the diagnosis. It is necessary to remember that exposures at home, or during other employments, may produce the same type of dermatosis, and that these factors must be inquired into. It is not always easy to eliminate non-occupational diseases such as seborrheic dermatitis, mycotic infections of the hands and other areas, psoriasis, and pyogenic dermatoses. It is well known that some of these diseases predispose to other skin eruptions, particularly those of the contact type. Careful study is needed to interpret correctly the presenting lesions.

Prevention

Any program for the prevention of occupational disease should receive the cooperation of all agencies interested: the employer, the employee, insurance carriers, and the industrial commission of the locality. This preventive work is steadily progressing. Hygienic plant conditions, protective clothing, adequate ventilation, and general cleanliness of the place of employment, machinery, and workers themselves are important. Adequate facilities for employees to wash and to take showers, if necessary, should be provided. In certain industries the clothing worn by the worker should be thoroughly washed each day, and the soaps and other

cleansing agents used should be tested to see that they are not unnecessarily irritating. Protective creams and emollients should be supplied whenever they are needed. Sometimes it is possible to change the mode of manufacture, or the substance used in a process, and this has been found beneficial both to the worker and employer at times.

The industrial physician plays an important part in examining the prospective employee. Applicants with obvious skin diseases—ichthyotic, seborrheic, or allergic—should not be employed near possible irritants. Widespread or active mycotic disease should be remedied before employment. A history of previous eruptions due to irritants or relatively innocuous substances should be considered in the placement of the applicant. The use of the patch test may be introduced to predetermine sensitivity to irritants which are used in the work; however, only a positive test is helpful, for sensitivity will develop after varying lengths of exposure. It may be found advantageous to employ the Negro in occupations where irritating substances are used, as the colored race is definitely less susceptible to irritants of many types, and in particular to photosensitizing agents. Workers with very hirsute bodies should probably be excluded from working with petroleum products, as they are likely to develop follicular dermatitides. Women are usually more cleanly in their habits, and may be employed with benefit in some occupations.

Treatment

The earlier treatment is begun and the milder the medication, the better will be the general result. If the dermatosis be allowed to continue without therapy serious disease of a chronic nature may result, and therapy may be much less helpful. Removal of the causative agent or agents is imperative for cure. A change of occupation and cessation from all work for a time may work a hardship upon the employee, but if no means to counteract the irritant can be found there is little else to be done. Local therapy should be used with the understanding that one is dealing with an already irritated skin. In early cases soothing applications are indicated. The use of simple antipruritic lotions, saline, potassium permanganate, or aluminum acetate compresses are helpful in all

acute dermatoses, no matter what the offending agent, and all patients should avoid the use of soap and water or friction. Older and more chronic eruptions may require the use of crude coal tar ointments, or other similar preparations, and usually they will also need the advice and judgment of a dermatologist trained in the diagnosis and treatment of such difficult problems.

Abstract of Discussion

Dr. W. L. Kirby (Winston-Salem): I am interested in the question of whether or not those cases in which allergies are responsible for the patient's occupational disease are compensable.

Dr. Williams: Some authorities have included in their criteria for diagnosis the re-exposure of the patient to identical occupational environs under well controlled conditions after a suspected occupational dermatitis has cleared up. If such a re-exposure causes a similar dermatitis, compensation is usually given. I think most compensation commissions recognize that an occupational dermatitis causing a flare-up of a pre-existing dermatitis during the time the patient is employed is almost always deemed compensable. For that reason we have discussed the importance of clearing up these pre-existing skin conditions before the patient is employed in any occupation where he must work with irritants.

There is an old idea that when you do not know what to do, you must do something. Nothing could be further from the truth. When you do not know what to do, do nothing rather than do something for the mere sake of activity.—Willard O. Thompson: *Common Sense in the Practice of Medicine*, Illinois M. J. 80:368 (November) 1941.

"Is This Product Council-Accepted?"

This is the first question many physicians ask the detail men, when a new product is presented.

If the detail man answers, "No," the doctor saves time by saying, "Come around again when the Council accepts your product."

If the detail man answers, "Yes," the doctor knows that the composition of the product has been carefully verified, and that members of the Council have scrutinized the label, weighed the evidence, checked the claims, and agreed that the product merits the confidence of the physicians. The doctor can ask his own questions, and make his own decision about using the product, but not only has he saved himself a vast amount of time but he has derived the benefit of a fearless, expert, fact-finding body whose sole function is to protect him and his patient.

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Mead Johnson & Company cooperates with both Councils, not because we have to but because we want to. Our detail men can always answer you, "Yes, this Mead Product is Council-Accepted."

COMBINATION OF THE CLAVICULAR CROSS AND FIGURE OF EIGHT DRESSING IN TREATING FRACTURES OF THE CLAVICLE

W. EDWIN MILLER, M. D.

WHITEVILLE

The purpose of this paper is to review the basic principles in the treatment of fractures of the clavicle and to demonstrate a technique of applying the clavicular cross which is different from that described in the textbooks in that it combines the figure of eight dressing with the cross.

It is said that over 200 different methods have been described for treating fractures of the clavicle. This number indicates that none of these methods have proved satisfactory in the hands of many physicians. After a review of the literature on the subject, my impression is that efforts to devise more satisfactory appliances for the ambulatory treatment of this fracture have tended to complicate rather than simplify it. No one method is satisfactory in every case; but if attention is paid to detail in applying the clavicular cross, I find that this method gives fair cosmetic and very good functional results in the majority of fractures of the clavicle.

To treat any fracture correctly one must be fairly familiar with the anatomy of the part and know the general mechanics involved. The clavicle serves as a strut to hold the shoulder in its normal position, and is the only bony connection between the shoulder girdle and the trunk. When this support is broken and the fragments overlap, two forces act to produce the deformity—namely, gravity and muscle pull. In most fractures of the clavicle the characteristic deformity is a downward, inward, and forward slumping of the shoulder on the affected side. All who have seen many injuries to the clavicle have observed that the fracture usually occurs in the outer part of the middle third. Several reasons are given for this. At this point in the clavicle there is a junction of two curves, and the bone is thinner. The clavicle is without ligamentous or muscular attachments at this site. This last reason is thought by some authors to be the most plausible. When a fracture of the clavicle occurs, the inner fragment is rarely dis-

placed to any marked extent. Although the sternocleidomastoid muscle tends to pull this fragment up, the costoclavicular ligament tends to prevent this displacement. The outer fragment moves with the shoulder, being displaced downward, inward, and backward by the force of gravity and the pull of muscles attached to the fragment and the shoulder.

Etiology

In the majority of these cases the fracture of the clavicle is due to a sudden blow received directly on the shoulder or transmitted to the shoulder through the outstretched arm. Today automobile accidents are responsible for most of the bad fractures. Many patients receive fractures of the clavicle while engaging in athletic sports. It is estimated that about 1 per cent of babies receive fractures of the clavicle due to compression in the birth canal.

Diagnosis

The typical fracture of the clavicle is fairly easy to diagnose. In the greenstick type there is an angular deformity at the fracture site. In cases where the fragments overlap, the shoulder drops downward, forward, and inward. The patient usually holds the forearm on the affected side with the opposite hand. There is a history of trauma. On palpitation over the clavicle tenderness is noted; if some time has elapsed since the injury, swelling is also present. In young children the mother may notice that the child does not use one upper extremity well and cries with pain when lifted by the arms. The x-ray is the greatest aid in making a definite diagnosis of any fracture. The shoulder on the affected side should be exposed with the clavicle to rule out other fractures. Because the clavicle is easily palpable one should be able to treat these fractures very well without the aid of the x-ray picture; however, it is best to have a roentgenogram if possible.

Treatment

The object of treatment is to correct the deformity and to maintain reduction with the least amount of trauma to the soft parts and with maximum comfort to the patient.

Some objections to the clavicular cross are: (1) It makes an unsightly dressing; (2) it is one of the most uncomfortable

dressings; (3) it does not maintain reduction.

We are not particularly interested here in streamlining the dressing for fractures of the clavicle. If full attention is paid to detail in the application of the splint, it is possible to make the patient fairly comfortable. No ambulatory treatment in my hands has made it possible to eliminate all discomfort. As to maintaining the reduction, I have found that the clavicular cross will elevate the shoulders. Eliason makes this statement: "The contour of the ribs is such that if the shoulder is pushed back it will of necessity be pushed up. In other words, if the shoulder can be held back it will stay up and the outer fragment will fall in place."

Most authors agree that the best method for treating fractures of the clavicle is to place the patient in bed on a firm mattress and apply lateral traction to the arm on the affected side. This may be the treatment of choice in complicated cases where there are associated fractures of the scapula or humerus and possibly in those cases where the clavicle is badly comminuted and the fragments displaced. In such instances traction is applied for some two or three weeks; then some ambulatory apparatus is applied. If the patient is a young lady who demands the best anatomical and cosmetic results, the lateral traction method should be employed.

Open reduction is seldom resorted to in the treatment of fractures of the clavicle. I have had one case where interposed soft parts prevented satisfactory reduction after lateral traction had been tried.

A home-made clavicular cross is desirable, since it can be made to order for any patient. This type of apparatus is not expensive and can be held in position better than manufactured splints with buckles which the patient can loosen when he chooses. The splint may be made of any light wood thick enough (about one-half inch) to hold the shoulders back. Careful padding of the splint makes it fairly comfortable for the patient. The horizontal part of the cross should be wide enough to act as a spreader for the shoulder strap, thus preventing any undue pressure on the axillary nerves and vessels. The vertical part of the cross should be about two by one-half inches and should extend from the level of the shoulders down to the second lumbar vertebra. After the splint and shoulder straps have been well padded the



cross is ready to be applied. The patient is seated on a low stool and an assistant holds the cross against the patient's back. The shoulder strap is first applied to the normal shoulder and then to the injured side. If there is an angulation of the fragments forward, a felt pad is placed over this point and pressure is made on the pad by straps of adhesive starting on the front of the chest and extending across the shoulder to the back. The shoulder straps of the cross are fastened together in front by a piece of bandage or a strip of adhesive. A figure of eight dressing is then applied to the shoulders, including the horizontal piece of the cross, thereby making the shoulder straps secure. The vertical piece is then brought against the patient's back by means of a belt about his waist passing over the lower end. Such an apparatus in my experience gives good results in the large majority of cases of fractured clavicle. It is simple, inexpensive, and available anywhere at any time.

Combinations of Liver Extract and Iron.—We may say that the therapeutic indications on the one hand to stimulate red cell maturation and on the other to adequately stock the body with sufficient iron for hemoglobin production, are so definite as to make the various combinations of liver extract and iron as illogical as they are expensive. An individual in whom liver therapy is indicated will need continuous and persistent treatment during life. This situation does not obtain in the iron deficiency group for once the reserve has been replenished and causal factors eliminated, the necessity of further treatment ceases. Furthermore, the use of such combinations greatly increases the probability of inadequate dosage of whichever factor chances to be the required one.—Philip F. Eckman, M.D.: *Indications for Use of Iron in Treatment of the Anemias*, Minnesota Medicine, 23-712 (October) 1940.

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THE SOBER NEW YEAR

The whole world faces the New Year soberly. Virtually every nation is involved in a struggle for existence. In our country there is little of the Sir Galahad complex with which we rather gaily went to the rescue of Democracy in the first World War. We now care little what form of government the nations of Europe finally adopt, so long as we can keep our own.

The dastardly deed of Japan—beginning actual warfare while her ambassador of good will was ostensibly doing his utmost to come to terms with our country—succeeded in uniting the whole nation within a few hours as no other means could have done in weeks or months. The medical profession—which, as Dr. Fishbein has truly said, is the best organized profession in the country—had already done much to shoulder its share of the work of defense. It will have much more to do, in proportion to its numbers, than will any other profession except the army itself. This will mean sacrifices for all doctors—in camp, in the medical school, and in civilian practice. It is quite possible that another

influenza pandemic will come; but even if it does not, American doctors will probably have the hardest year's work that they have faced since the great influenza epidemic.

Even with this grim prospect, however, the picture is not altogether dark. Signs are multiplying that the axis powers are rapidly weakening. The German people are so fanatically devoted to Hitler, and so acutely conscious of the harvest of hate they have been cultivating for years, that they will probably continue to fight until forced to realize that they have more than met their match; but this awakening cannot be postponed indefinitely. Let us hope that the end may come quickly.

Even with the whole world at war, and even with the hardships of tire rationing, possible food restrictions, and shortages of other articles, either semi-luxuries or semi-necessities, we still have in America the greatest treasure house of natural resources in the world; we still have the American spirit that does not know defeat; and we still have the compassion for the suffering of others that prompts our gifts to such agencies as the Red Cross. Our profession can say, without boasting, but with all due humility, that American medicine is the best in the world today. Let us all resolve to dedicate ourselves anew to the service of our country, and to recapture the faith that our forefathers had in themselves, in their friends and neighbors, and in their God.

* * * *

SOLOMON AND HITLER

So many wars have been fought in the name of religion and so often both sides have claimed that they had the special blessing of the Almighty, while the enemy were under His curse, that one hesitates to quote Scripture in discussing the present world conflict. A passage from Proverbs, however, seems to describe Hitler so exactly that it is given here:

Six things the Eternal hates,
ay, seven he loathes:
haughty eyes, a lying tongue,
hands that shed innocent blood,
a mind with crafty plans,
feet eager to go mischief-making,
a false witness who tells lies,
and him who sows discord within his
group.

—Proverbs 6:16-19 (Moffatt's Translation.)

A CALL TO THE MEDICAL PROFESSION

An editorial in the *Journal of the American Medical Association* for December 27 has perhaps been read by most of the readers of the NORTH CAROLINA MEDICAL JOURNAL. Because of its vital importance, however, it is reprinted in full, together with the Enrollment Form.

* * *

The nation is at war. The Congress has passed an amendment to the Selective Service Act which will call for registration of every man up to the age of 65 and which will place all men under 45 years of age subject to service at the order of the Selective Service boards.

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians was established by order of the President on October 30. Thus the medical profession itself aids in determining proper distribution of the medical profession in supplying the needs of the armed forces and maintaining medical service to civilian communities, public health agencies, industrial plants and other important needs.

At a meeting of the Procurement and Assignment Service held in Chicago at the headquarters of the American Medical Association on December 18, jointly with the Committees on Medical Preparedness of the American Medical Association, the American Dental Association and the American Veterinary Medical Association, plans were drawn for making immediately available to the United States Army and Navy Medical Corps the names of physicians who wish to be enrolled promptly in the service of the government in this emergency.

On the opposite page is published a blank by which every physician may at once place his name with the Procurement and Assignment Service as one who is ready to serve the nation as the need arises. If you wish to make yourself available for classification, fill out this blank and send it at once to Dr. Sam F. Seeley, Executive Director of the Procurement and Assignment Service. When

these blanks are received, they will be classified and checked with the information available in the national roster of physicians at the headquarters of the American Medical Association.

For two thousand and nine counties in the United States, lists have been prepared indicating physicians who are engaged in necessary civilian projects, public health services or educational activities from which they cannot be spared. Shortly the rest of the counties will have such lists available.

In each of the corps areas covering the United States a committee is being established, including representatives of medical, hospital, educational, dental and veterinary activities. In the individual states, committees of medical, dental and veterinarian professions are being established through which the corps area committees will exercise their functions. In each county also local committees will provide accurate information regarding the status of each member of the profession concerned.

The raising of the Selective Service age from 28 to 45 will place a great number of additional physicians in the category of those on whom the nation may call as their services are needed. Estimates indicate that some sixty thousand physicians thus become available for service and that forty-two thousand dentists under the age of 45 also become subject to call. By enrolling with the Procurement and Assignment Service immediately, utilizing the blank on the opposite page, all physicians, but particularly those under 45 years of age, insure to every extent possible assignment to the type of service for which they are best fitted. They avoid thus also the possibility of unclassified service with the United States Army during the period that may be necessary following selection by the Selective Service before the commission can be secured. A physician called by the Selective Service who has not enrolled or who is not on a reserve list obviously serves without a commission during the time that necessarily elapses before a commission is secured. In future issues of *The Journal* announcements will be made regularly of the numbers of those who enroll and of the extent to which the immediate needs of the Army, Navy and other government agencies are being supplied.

ENROLLMENT FORM FOR PROCUREMENT AND
ASSIGNMENT SERVICE FOR PHYSICIANS

DR. SAM F. SEELEY, Executive Officer
Procurement and Assignment Service
New Social Security Building
4th and C Streets S. W.
Washington, D. C.

Dear Doctor Seeley:

Please enroll my name as a physician ready to give service in the Army or Navy of the United States when needed in the current emergency. I will apply to the Corps Area commander in my area when notified by your office of the desirability of such application.

SIGNED.....

1. Give your name in full, including your full middle name:
2. The date of your birth:
3. The place of your birth:
4. Are you married or single?
5. Have you any children? If so, how many?
6. Do you believe yourself to be physically fit and able to meet the physical standards for the Army and Navy Medical Corps?
7. Have you filled out previously the questionnaire sent to all physicians by the American Medical Association?
8. When and where were you graduated in medicine?
9. In what state are you licensed to practice?
10. Do you now hold any position which might be considered essential to the maintenance of the civilian medical needs of your community? If so, state these appointments:
11. Have you previously applied for entry into the Army or Navy Medical Service? If so, state when, where and with what result (if rejected, state why).

SIGNATURE.....

ADDRESS.....

Date.....



CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE

Clinical History

W. W., a Negro male, aged 30, was first admitted to the Vanderbilt University Hospital on January 26, 1938. He had been seen in the outpatient department in 1927 with the complaint of chronic tonsillitis and epistaxis. Tonsillectomy was advised. The second visit was in October, 1936, at which time it was noted that his mentality was poor, that the extremities were long in proportion to the torso, the fingers tapering, and that there was marked scantiness of facial and body hair. The hair present was of a feminine distribution. The penis was small, as were the testes. A follicular eruption with dryness and slight scaling of the skin was a conspicuous finding. The blood pressure was 102 systolic, 75 diastolic; there were 3,200,000 red blood cells and 8.5 Gm. of hemoglobin. A diagnosis of vitamin deficiency and hypogonadism was made. The patient was treated with some success for vitamin A deficiency. Anemia was refractory to treatment.

Since about 1936 the patient had noted weakness and dyspnea on exertion, and progressive slowing of his mental processes. Until a year and a half before admission he shaved regularly, but since that time hair had disappeared from his face, and he had noted further loss of pubic and axillary hair. He had severe epistaxis, for which the nasal mucosa was cauterized. Edema of the ankles and feet developed in 1937. This was apparently relieved by diet and the administration of yeast. For several months prior to admission he had noticed dizziness on change of position and great weakness when walking. He thought he had lost some weight, although his appetite and digestion had remained good. He had experienced a marked decrease in libido and had not had sexual intercourse for a year. His tolerance for cold weather had diminished.

Physical examination revealed a well-nourished Negro male, who looked younger than his stated age. He was lethargic and the mental processes were slow. The skin

was dry, rough, and inelastic, and bran-like desquamation was present over the areas exposed to trauma. The facial, axillary, and pubic hair was absent. The eyebrows were thin. The scalp hair was sparse, but there were no areas of baldness. The face was smooth and almost devoid of expression. Convergence of the bulbs was poorly performed; the fundi and eyes were normal. An ulcer was present on the nasal septum. The heart sounds were distant. The blood pressure was 100 systolic, 60 diastolic. The visual fields were normal. An infantile penis and very small testes were noted. The hips were of feminine contour.

Laboratory examinations showed the urine to be normal except for low specific gravity. On only one occasion did the specific gravity exceed 1.010. There were 2,600,000 red blood cells, with 7 Gm. of hemoglobin. The blood sugar was 60 mg. per 100 cc. A glucose tolerance test gave a blood sugar of 129 mg. per 100 cc. at the end of the first hour, 67 in two hours, 59 in three hours, and 48 in four hours. The cholesterol content of the blood was 156 mg. per 100 cc. The basal metabolic rate was -32 per cent. A gastric analysis showed no free acid after an alcohol meal, 7 cc. of free acid and 24 cc. of combined acid after histamine. The white blood cell count was persistently low, varying between 4000 and 5000, with an essentially normal differential count. The cerebrospinal fluid was normal in every respect.

During the patient's stay in the hospital his blood pressure varied between 105 systolic, 80 diastolic, and 80 systolic, 50 diastolic. His response to large doses of thyroid extract was poor and resulted in but slight elevation of the metabolic rate. He lost about 12 pounds in weight and vomited frequently. On attempting to go to the bath room he fell to the floor and apparently lost consciousness temporarily. Liver extract was administered in large quantities, and he gained weight, became more alert, and was ambulant at the time of his discharge, on May 24, 1938. A skull plate made during this admission revealed some flattening of the sella turcica and marked absorption of the posterior clinoid processes.

Following discharge the patient was seen several times in the clinic. His basal metabolic rate was recorded as -41 per cent. The anemia did not recur; he continued to feel strong, and remained up and able to do

some work about the house. However, on the morning of July 7, 1938, he was found in bed in a convulsive seizure. He regained consciousness, only to experience a second convulsion. The only statement by the family of possible significance relative to these early morning seizures was that for several weeks he had appeared very weak during the early morning hours and had complained of excessive hunger.

He was admitted to Vanderbilt University Hospital in coma. The respirations were rapid and noisy, and a few convulsive movements of the face and arms were described. He was not sweating. Marked salivation was noted. A severe generalized convulsion occurred, lasting about a minute. The cardiac rate was 44, the blood pressure 90 systolic, 70 diastolic. The blood sugar was 25 mg. per 100 cc. Glucose and adrenalin were administered and he improved considerably. The respirations became less labored and he regained consciousness. Forty-five minutes later he was out of bed. He was given orange juice and sugar by mouth during the evening, but at 11 p. m. he again lapsed into coma. Increased salivation recurred. Twenty-five grams of glucose intravenously revived him within two minutes. A clysis of 2000 cc. of 5 per cent glucose was started. At 3 a. m. he again lapsed into coma, but after 25 Gm. of glucose intravenously he responded to questions. At 5 a. m. coma recurred. Fifty grams of glucose intravenously was given without effect, and at 8 a. m. his blood sugar was found to be 38 mg. per 100 cc. Adrenalin at fifteen minute intervals, saline and glucose by rectum, anterior pituitary extract and eschatin, thyroid and dessicated anterior pituitary extract by nasal tube, and caffeine sodium benzoate were of no avail. The patient could not be revived, and he died on the evening of July 8, 1938.

Discussion

DR. ARTHUR GROLLMAN: The clinical history indicates a chronic hypophyseal deficiency, which began apparently in adolescence, leading to the eunuchoidism noted in the patient at the age of 19. Although it did not lead to the extreme cachexia associated with Simmonds' disease, the dysfunction of the pituitary induced the many symptoms—*anemia, loss of the hirsutes, atrophy of the reproductive organs, digestive disturbances,*

hypotension, a greatly reduced basal metabolic rate, a markedly increased tolerance to carbohydrates, and attacks of hypoglycemia—which are characteristic of an insufficiency of the anterior lobe of the hypophysis. The pathologic disturbance responsible for the hypophyseal deficiency in this patient would appear to be one of the rarer conditions which give rise to Simmonds' disease. The clinical findings preclude a chromophobe adenoma or craniopharyngioma as likely causes. The rarer type of cyst arising in the pars intermedia, or some chronic infectious process would seem most likely. Although both of these conditions are extremely rare, they appear to be the only logical etiologic agents which might be responsible for the disorder as manifested in this patient.

In addition to the destructive process in the pituitary just described, one would anticipate finding at autopsy some residual functional anterior lobe tissue which would explain the absence of the extreme cachexia noted in the typical patient dying of pituitary insufficiency. The other glands of internal secretion may also be predicted to be extremely hypoplastic. The thyroid will be small and will lack its usual alveolar appearance, and the parenchyma will be replaced by fibrous tissue. The thymus will be absent; the parathyroids small. Although it will be very small and hypoplastic, the adrenal cortex should show no true degenerative changes such as are observed in Addison's disease due to cortical atrophy. The recurrent hypoglycemia shown by the patient was due to a failure of normal glucogenesis and not to any overactivity of the pancreatic islets. In fact one may predict the existence of a hypoplasia of the pancreas involving both acinous and islet tissues. The testes will be atrophic, with degeneration of both spermatic tubules and of the interstitial tissue. The accessory reproductive organs will be undeveloped and will resemble those observed in the castrate. The tissues and organs generally will also be small and hypoplastic. This microsplanchnia will be observed in the gastro-intestinal tract, heart, kidneys, and bone marrow. The changes in the last named tissue were responsible probably for the observed anemia.

Dr. Grollman's Diagnosis

Pituitary insufficiency (Simmonds' disease).

Pathological Diagnosis

Pituitary insufficiency (Simmonds' disease).

Pathological Discussion

DR. ROBERT P. MOREHEAD: This patient at autopsy showed findings compatible with the diagnosis of Simmonds' disease. A destructive process in the region of the hypophysis adequately explains the clinical picture as well as the accessory postmortem findings. A mass of yellowish tissue measuring 4 x 2 cm. was found to occupy the sella and to extend forward to the optic chiasma. A yellowish material exuded from the cut surface. The sella was enlarged and the dura surrounding the mass was thickened and firm. A definite line of cleavage could not be established between it and the new growth. Microscopic study revealed almost complete destruction of the hypophysis by a chronic granulomatous inflammatory process with the development of poorly formed tubercles. Numerous irregular cavities were found throughout the mass, filled with exudate containing a predominance of neutrophils. Sections stained for tubercle bacilli gave negative results.

The accessory findings relate to the endocrine system. All glands were smaller than normal. The adrenals weighed 4.5 Gm. each, giving definite evidence microscopically of hyperplasia but no evidence of atrophy. The prostate was very small and microscopic study revealed very little glandular tissue. The testes and thyroid presented a similar picture, the former weighing only 10 Gm. each and the latter only 15 Gm. The parathyroid glands were not identified and thymic tissue appeared to be absent.

The essential finding in this case is a destructive granulomatous inflammatory process involving the hypophysis and presenting a picture strongly suggestive of tuberculosis. The picture is perfectly compatible with that condition, although organisms were not demonstrated in the section. The infection may have originated in the primary complex and reached the hypophysis or sella by a hematogenous route. Active tuberculosis elsewhere was not demonstrated. It is perfectly proper to consider also the possibility of infection superimposed on a pre-existing cyst of Rathke's pouch, with destruction of all structures by which we recognize this type of lesion.

Atrophy and hypoplasia of the remaining endocrine glands are best explained on the basis of disuse rather than absence of specific glandulotrophic hormones, since the latter have not been demonstrated.

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL
WINSTON-SALEM

Presentation of Case

Mr. D. R. H., a 69 year old white man, was admitted to the City Memorial Hospital for the last time October 29, 1941, because of weakness and tarry stools. He died the following morning.

The family history revealed no tuberculosis or cancer. The past history and the review of systems elicited nothing pertinent. The patient had suffered from dyspnea for two or three years. Some nausea with epigastric discomfort had been experienced three or four years ago, but since then his appetite and digestion had been reasonably good. He had drunk little alcohol during his life. In February, 1937, he was operated on for an acute right mastoiditis and three months later was treated medically for acute otitis media. Results were good, although moderate deafness was noted during his final illness. The laboratory work done during these two admissions was essentially normal. The red cell count was 4,000,000, with 76 per cent hemoglobin. Urine examinations were negative.

The patient's present illness started suddenly on the night of July 21, 1941, when he awoke vomiting large amounts of blood. He had several grossly bloody stools, and was brought to the emergency room, pale, restless and weak but not in shock. The physical examination on this admission revealed an obese, pale, elderly man, somewhat dyspneic, and coughing. The temperature was 99.2 F., the pulse 88 and the respirations 24. The blood pressure was 115 systolic and 70 diastolic. There was generalized grade III arteriosclerosis. The heart was "quite large", with a localized "hemic" systolic murmur at the aortic area. The chest was clear throughout. The abdomen was soft and generally tender, especially in the epigastrium and left upper quadrant. The liver was not pal-

pable and no masses were found. There was moderate pitting edema of the extremities.

The patient's course in the hospital was quite uneventful. The stools, which were at first black, finally became light tan in color, showing only occult blood. The anemia responded to three 250 cc. blood transfusions and liver extract, after hemorrhage had apparently ceased. He vomited no blood after admission. He was finally discharged August 12, 1941, in apparently good condition. His blood pressure was 110 systolic and 68 diastolic.

Fluoroscopic examination on August 12, 1941, showed a slight left-sided enlargement of the heart and a slightly dilated aorta. The stomach and duodenum appeared normal. A gastric analysis on July 30 showed an absence of free hydrochloric acid before and after the test meal, with a maximum combined hydrochloric acid of 30°.

The following blood counts were made:

Date	Red blood cells	Hemoglobin	White blood cells
July 22	3,080,000	8 Gm.	5,600
July 25	2,540,000	7 Gm.	4,750
July 31	1,940,000	7 Gm.	3,650
August 8	2,700,000	8 Gm.	4,000

The albumin-globulin ratio was 1.1 and the total proteins 5.0 Gm. per 100 cc. There were 3.8 per cent reticulocytes before liver was given. No serological test for syphilis was done.

The final admission (October 29, 1941) followed "hemorrhaging" from the bowel of about two days' duration, but without vomiting. On admission he vomited dark coffee grounds material. The temperature was 97.6 F., the pulse 100 and the respirations 24. A blood count showed 4.75 Gm. of hemoglobin and 19,750 white blood cells. His urine gave a 4 plus reaction for sugar, but was otherwise negative. The patient appeared very pale and acutely ill on admission, and his condition grew steadily worse. He continued to vomit dark material and died at 8:30 the following morning.

Differential Diagnosis

DR. E. B. BROOKS: Among the conditions which may cause gastric bleeding are cancer of the intestinal tract, stomach ulcer, duodenal ulcer, diseases of the blood vessels, aortic aneurysm, dilated esophageal varices and telangiectases, and acute venous congestion caused by acute gastritis, enteritis, or passive congestion. Still other conditions

which may cause vomiting of blood are syphilis, broncho-pulmonary lesions, blood dyscrasias, and splenomegaly. The most frequent causes of bleeding from the stomach are ulcer of the stomach or duodenum, and esophageal varices due to a cirrhotic liver. That would make us feel that this man had one of these two things.

People with stomach ulcers do not often die from the hemorrhage, and this man apparently did die from the hemorrhage. That would mean that the most likely possibility was cirrhosis of the liver with esophageal varices, or some other obstruction that would cause esophageal varices to form. A great number of deaths resulting from the vomiting of blood are due to rupture of esophageal varices, or to an aneurysm rupturing in the stomach. If an esophageal varix did not cause this man's death, there is a possibility that an aneurysm had ruptured in the stomach. It may have ruptured several months ago and then recurred two or three months later.

Since no Wassermann test was made, we do not know whether or not the patient had syphilis.

He did not have a broncho-pulmonary lesion. The lungs were clear. He had no splenomegaly or blood dyscrasia. I do not see how he could have had a cancer over such a long period of time without more symptoms. Whether he had some vague condition like miliary aneurysm or large aortic aneurysm and telangiectases I do not know. I should say that the most likely cause of death was rupture of a varix. My second guess would be an aneurysm.

DR. J. C. RODICK: It was very difficult to make satisfactory x-ray examination of this man. He was obese and quite ill. The stomach was of normal pattern and normal mucosa. There was a normal fundus. The small bowel seemed to contain no lesion at all. At times the duodenal cap looked distended. This might be evidence of an organic lesion, but it appears to be quite normal. The esophagus did not show any evidence of varices; however, this does not mean that he did not have a varix that ruptured.

DR. C. H. McCANTS: What percentage of cancers of the stomach can you demonstrate with x-ray? Is it 100 per cent?

DR. RODICK: It is not that high. The cancer may be small and so situated that you

cannot see it. I think that we do miss those situated posteriorly in the upper half of the stomach. This man may have had an esophageal, gastric or duodenal lesion. However, the entire examination was negative for any organic lesion, except a slightly dilated heart and aorta, which might have been due to his age and obesity.

DR. H. M. STARLING: A patient with a penetrating ulcer might bleed to death. I think that this is said to be a rather frequent cause of death from peptic ulcers, particularly in older persons.

DR. R. V. WOLFE: How do you account for the absence of free hydrochloric acid?

DR. BROOKS: Older people on whom we have done gastric analyses have not had much free hydrochloric acid. We also noticed this finding in a number of patients with ulcers who had no symptoms whatever.

DR. W. L. GRIMES: Why was the blood count so high? The white cell count was almost 20,000. Was a differential done on this last count?

DR. S. S. MILES: No.

DR. BROOKS: He had had tarry stools. Blood in the stomach would give an elevation of white blood cells.

Clinical Diagnosis

Cirrhosis of the liver.

Rupture of esophageal varix.

Dr. Brooks's Diagnosis

Cirrhosis of the liver.

Rupture of esophageal varix.

Anatomical Diagnosis

Atrophic cirrhosis of the liver.

Rupture of esophageal varix.

Chronic atrophic gastritis.

Splenomegaly.

DR. T. T. FROST: The liver weighed 1470 Gm., the spleen 320 Gm. The liver showed an early but very definite atrophic cirrhosis without very much nodularity or reduction of liver size. The stomach showed an atrophic gastritis and was filled with blood, as was the rest of the small intestine. The blood resulted from the erosion of an esophageal varix.

DR. GRIMES: Was there no free fluid in the peritoneal cavity?

DR. FROST: No.

DR. GRIMES: Is that not very rare?

DR. FROST: No. The collateral circulation

develops early in the disease and the ascites is a terminal event. The sections of the liver show some irregularities of the surface. There is some division into irregular lobules by connective tissue, which does not follow the anatomical liver lobules. Associated with it is a considerable amount of fatty infiltration. The stomach shows marked atrophy of the mucosa, which accounts for the absence of free hydrochloric acid. I do not believe that the age entirely accounts for the absence of hydrochloric acid. The atrophy is greater than would be expected in a man of this age. The veins in the esophageal submucosa are greatly dilated. The spleen shows a diffuse fibrosis and thickening of the sinusoids. The capsule is considerably thickened. This man did not have any jaundice. There was nothing clinically that would suggest cirrhosis of the liver except one thing: the reduction of the albumin-globulin ratio which occurs in liver damage.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Hospitals: A nurse is not liable for injury caused by executing orders of a physician unless it is apparent that injury would result; where a nurse is not liable for injury to the patient the hospital cannot be held liable as her employer.

This is an action originally instituted against a hospital, an incorporated institution; a doctor, the lessee and operator of the hospital; and his wife, who was employed as Assistant Manager and Superintendent of Nurses. The hospital, however, filed an answer stating that the doctor defendant had leased the hospital and was operating it on his own account at the time the plaintiff sustained her injury; as a consequence no judgment was sought against the hospital. The facts in the case are as follows: The plaintiff in this suit gave birth to a child on January 6, 1929. After delivery she remained in a feeble condition, and on January 22, 1929, began having convulsions. Upon the advice of her family physician, who, it is noted, was not a party to the suit, the patient was sent to the hospital mentioned above for treatment in the "sweat cabinet" or radiation cabinet. The treatment was given by the Superintendent of Nurses in the presence of and under the direction of the patient's family physician. As far as can be determined from the records the doctor who was the lessee of the hospital was not present at the time the treatment was given. The treatment, it was alleged in the complaint, caused serious and painful burns, sloughing of the tissues, and serious and painful injuries.

The following facts were proved at the trial in Superior Court: 1. That the family physician was present, and that he directed and supervised the treatment. 2. That the appliance was an approved type and in general use. 3. That the nurse who gave the treatment was competent and possessed the required skill and exercised the degree of care which the law deemed essential. Despite these find-

ings the jury agreed that the injury was caused by the negligence of the defendants, as alleged in the complaint, and \$29,975 was assessed as damages. A motion entered by the defendants as of nonsuit was denied by the trial judge. The defendants appealed to the Supreme Court.

When this case came on for consideration before the higher court it was the duty of this court to determine if a sufficient amount of evidence had been introduced to warrant presentation of the case to the jury. The Justice writing the opinion felt that the injuries complained of could result from one of the following causes: 1. That the body was improperly wrapped. 2. That the patient was suffering from some disease rendering her sensitive to the treatment. 3. That the patient was retained in the cabinet for an excessive period of time. It was proved at the trial that patients had been given this form of treatment previously in a nude condition and that no injury had resulted. This fact absolved the nurse from responsibility, as this was the only cause which could possibly implicate her in connection with the treatment administered. The other two possible causes would, of course, involve the question of diagnosis and judgment on the part of the family physician, who, as stated above, was not a party to the suit. The Court did not feel that the nurse was in any respect negligent, as

shown by the evidence, and the Justice made the following remarks incident to his opinion: "Where an injury to a patient is not attributable to any negligence of the attending nurse, the owner and lessee of the hospital employing the nurse cannot be held liable on the doctrine of *respondeat superior*." This means, of course, that if the nurse had been guilty of negligence in administering the treatment this negligence would have been imputed to the operator of the hospital and he also would have been liable for damages. The Court in this instance emphasized the fact that nurses in hospitals must of necessity obey and diligently execute the orders of the physician or surgeon in charge of the patient, and that they will not be held liable for injury resulting to the patient in the execution of such orders unless such instructions are so obviously negligent as to lead any reasonably prudent person to anticipate that substantial injury would result.

The Supreme Court reversed the judgment of the Superior Court, inasmuch as the evidence in the case was held insufficient to be submitted to the jury. The higher court felt that the motion for nonsuit duly made by the defendants should have been granted. (North Carolina Supreme Court, v. 202, p. 337. Decision rendered spring term, 1932.)

BULLETIN BOARD

PRESIDENT'S MESSAGE

December 24, 1941

Dr. F. Webb Griffith, President
North Carolina Medical Society
Asheville, N. C.

Dear Sir:

We appreciate your offer of the use of the President's column in the January issue of the NORTH CAROLINA MEDICAL JOURNAL, as contained in your letter of December 21, addressed to General Metts. Your letter has been referred to the writer for reply. The following comments seem apropos.

Physical Examinations: No doubt many of the physicians of North Carolina know that there has been a change in the method of conducting the physical examination of registrants, this new plan to be in operation by January 1, 1942. Under this plan, the local board physicians conduct a screening examination which is little more than a general inspection and consists in quickly sorting out those men that have readily discernible defects which are irremediable. The rest of the registrants requiring physical examination are then forwarded to an Army Examination Station, of which there are seven in this state at the following points: Asheville, Charlotte, Winston-Salem, Greensboro, Raleigh, New Bern, and Fort Bragg. Under this procedure there are two main advantages.

1. Registrants will know ten to twenty days prior to their expected date of induction whether they are physically fit for military service, and in this period can arrange their personal affairs so that they will suffer the least inconvenience because of their induction. Those men who are rejected will likewise not be inconvenienced.

2. The local physician will be saved a great deal of time, since he will not be called upon to do a duplicate examination. This is especially important at this time, since both the military requirements and the civilian needs must be met by a not too numerous physician personnel.

We are glad to lighten this load upon the examining physicians, who have borne it so well and have shown a fine spirit of patriotism.

Rehabilitation: Review of the physical examinations conducted in the past reveals the fact that there are a great many registrants who have remediable defects of greater or less degree, chief among which are dental defects. The rehabilitation of many of these men is not only desirable but may be accomplished at relatively little cost. The tentative plan of National Headquarters calls for these corrective procedures to be performed locally, and they are to become a large responsibility of the civilian physician and dentist.

Selective Service could not have operated without the wholehearted cooperation of many of our citizens, most of whom have labored without pay. Chief among this group stand the physicians who have been an integral part of every local board. We take this opportunity to express our gratefulness. We trust that we shall enjoy their cooperation and advice in the future as we have in the past.

For the State Director:

Yours very truly,
ELMUS D. PEASLEY
*Major, Medical Corps
Medical Officer.*

SECRETARY'S MESSAGE

Periodic self analysis is good for individuals and for institutions.

Take, for example, a medical society. It would be wise for each of our county medical societies, as it starts a new year, to take an inventory. The membership of each should ask itself such questions as: What is the society doing for its members? What is the society doing for the community? By sifting its activities in this manner each society can find its weaknesses and make plans for expansion where it is needed.

Does your society take a leading part in community affairs?

There are so many opportunities for the medical society in the average North Carolina community—opportunities for leadership and for giving advice in matters pertaining to health.

In these troublesome times there are many new responsibilities confronting the medical profession, many new functions for it to perform. Through its organization, the profession must be alert and equipped to take its place in civic affairs.

In this the first month of the New Year, I am insisting that each member pause long enough to ask, Where is our Society strong? Where is it weak?; to ask, Which activities can be curtailed and which functions should be expanded? Then see that the necessary changes are made.

—ROSCOE D. McMILLAN, M.D.

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

December 7, 1941—Raleigh

The Executive Committee of the Medical Society of the State of North Carolina met in Joint Session with the Executive Committee of the North Carolina Public Health Association in the Raleigh Room of the Sir Walter Hotel, Raleigh, on Sunday, December 7, 1941, at 11 a. m.

The meeting was called to order by Dr. F. Webb Griffith, President of the Medical Society of the State of North Carolina.

The following members were present:

Medical Society:

Dr. F. Webb Griffith, President
Dr. Donnell B. Cobb, President-Elect
Dr. Thomas DeL. Sparrow, First Vice President
Dr. Roscoe D. McMillan, Secretary-Treasurer

Councilors:

1st District—Dr. H. D. Walker
2nd District—Dr. G. W. Mitchell
5th District—Dr. J. G. Pate
6th District—Dr. George L. Carrington
7th District—Dr. Robert H. Crawford
8th District—Dr. James H. McNeill
9th District—Dr. I. E. Shafer
10th District—Dr. Harold S. Clark

Public Health Association:

Dr. R. E. Rhyne, President
Dr. Thomas Ennett, Vice-President
Dr. R. J. Sykes, Secretary-Treasurer
Dr. Carl V. Reynolds
Dr. M. T. Foster
Dr. R. J. Sykes of Raleigh, Secretary-Treasurer of the Public Health Association, presented for the consideration of the Executive Committee of the Medical Society of the State of North Carolina the following resolution:

Resolved that the North Carolina State Medical Society be requested to start their meeting at two o'clock p. m. on Tuesday, May 12, 1942 instead of at two o'clock p. m. on Monday, May 11, 1942, thereby allowing the North Carolina Public Health Association an additional one-half day for its annual meeting. (1) Because of the growth of the Health Officers Association and its allied agencies. (2) Because it is impossible to transact all of the business of the Public Health Association in one day.

The resolution was a result of a meeting of the Executive Committee of the Public Health Association and an outgrowth of a discussion in regard to the meeting of the Public Health Association with the Medical Society of the State of North Carolina.

There followed a period of intense discussion in which Dr. Carl V. Reynolds, Secretary of the State Board of Health and State Health Officer, very ably stated the cause of the Public Health Association by relating the history of its growth from a personnel of a few people who served altruistically to the present outstanding organization of doctors, nurses, engineers, etc. He stressed the fact that the Medical Society and the Public Health Association should work together and stated that organized Medicine and Public Health were too closely allied to be weaned or divorced from each other.

Drs. Shafer, Mitchell, McNeill and Carrington, Councilors of the Medical Society, figured prominently in the round table discussion following Dr. Reynolds' remarks.

Dr. Ennett, Vice-President of the Public Health Association, remarked on the importance of the two organizations continuing to work together for the common cause of friendship, leadership and public relations.

Having presented their resolution, the Executive Committee of the Public Health Association retired, leaving the matter to be decided by the Executive Committee of the Medical Society of the State of North Carolina.

Upon motion of Dr. G. W. Mitchell, seconded by Dr. James H. McNeill, the Executive Committee of the Medical Society of the State of North Carolina, by unanimous vote, convened in Executive Session.

The resolution of the Public Health Association was discussed briefly and the following motion by Dr. James H. McNeill, seconded by Dr. G. W. Mitchell, was unanimously carried:

"That the Executive Committee deny the request of the North Carolina Public Health Association and notify them that we favor their meeting with us in the Conjoint Session at Noon on Wednesday; are agreeable to their beginning their meeting on Wednesday afternoon; and are willing to arrange our Sectional Meetings in such a manner that subjects in which they are interested will come on Wednesday, in so far as we can."

The subject of Exhibitors for the Annual meeting was discussed at length, particularly the matter of an open bar being maintained by one exhibitor at previous meetings. Dr. McMillan stated that this particular firm had not been asked to exhibit at the 1942 meeting. Dr. Griffith expressed his disapproval of the policies of that one firm. The following motion by Dr. Mitchell, seconded by Dr. McNeill, was unanimously carried:

"That we go on record as backing up the President and the Secretary in the matter of open bars being maintained by exhibitors at the annual meeting, and let the President and Secretary handle the matter in their own way."

President Griffith reminded the group that there was a vacancy on the Board of Trustees of the Hospital Saving Association, caused by the death of Dr. T. W. M. Long and, at Dr. I. H. Manning's request, suggested that Dr. Donnell B. Cobb, of Goldsboro, be elected to fill the vacancy. Upon motion of Dr. J. G. Pate, seconded by Dr. R. H. Crawford, Dr. Cobb was elected to membership on the Board of Trustees of the Hospital Saving Association by unanimous vote of the Executive Committee.

The subject of rearranging the program for the Annual Meeting of the Medical Society so that all committee work and non-essentials could be taken care of on Monday afternoon and the Monday night meeting reserved for nomination of officers and essential work was introduced. In the discussion which followed it was brought out that such a change could not be made according to the By-Laws. The subject was deferred to be brought up at the meeting of the House of Delegates.

The dates of the annual meeting were brought up for confirmation by Dr. McMillan, and, upon motion of Dr. Shafer seconded by Dr. Mitchell, it was decided by unanimous vote to hold the meeting on May 11, 12 and 13, 1942.

The request presented by Dr. McMillan for Dr. W. H. Smith, Chairman of the Postgraduate Committee, for a donation of \$75.00 to be used in obtaining a speaker for each district meeting was discussed, but no action was taken.

Upon motion of Dr. Mitchell, seconded by Dr. Cobb, it was unanimously decided to donate \$250.00 to be used by the Cancer Control Committee.

Dr. McMillan suggested that the \$10,000 which the Society now has on savings be used to buy Defense Bonds. Upon motion of Dr. Crawford, seconded by Dr. McNeill and amended by Dr. Mitchell, it was decided by unanimous vote to invest the whole amount in accumulative Defense Bonds,

and the Secretary-Treasurer was instructed to buy in \$1,000 lots, or in denominations as nearly that as possible.

Following a discussion of the payment of dues by men in active military service, President Griffith appointed Dr. McMillan and Dr. Mitchell as a committee to study the feasibility of waiving dues and of refunding dues and to report to the House of Delegates in May, 1942.

There being no further business to come before the Committee, the body adjourned subject to the call of the President.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

At the Annual Meeting of the North Carolina Pathological Society on December 16, 1941, the following program was presented in the Medical Building, Chapel Hill.

1. Paget's Disease of the Mandible—Dr. Walter Summerville.
2. The Effect of Carbon Tetrachloride and Hepatic Resection on the Development of Cancer of the Liver in Rats Following Ingestion of P-Dimethylaminoazobenzene—Dr. Clark Brown.
3. Epidemiology and Pathology of Kidney Worm —Drs. H. W. Brown and Russell Holman.
4. Studies on Experimental Brucellosis — Drs. Forbus, Goddard, Brown and Margolis.

Dinner, 6:00 p. m., Carolina Inn

8:00 p. m.—Hypertension—Dr. Arthur Grollman, Bowman Gray School of Medicine of Wake Forest College.

* * *

Dr. Wm. deB. MacNider attended a meeting of the Examination Committee of the National Board of Medical Examiners, of which he is Chairman, on December 7, 1941, in Philadelphia.

* * *

The School of Medicine and the Extension Division of the University of North Carolina, in cooperation with the local county societies, have arranged for four postgraduate courses during the winter and early spring at Fayetteville, Durham, Raleigh and Kinston. The programs for the courses at Durham and at Fayetteville are as follows:

Durham, every Wednesday from January 14 to February 18—Watts Hospital.

Clinics at 5 p. m., dinner at 7 p. m., evening lecture at 8 p. m.

January 14:

1. Obstetrics—Dr. M. P. Rucker, Richmond.

January 21:

2. Clinical-Pathological Conference—Dr. Francis Wood and Dr. Baldwin Lucke, University of Pennsylvania.

January 28:

3. The Failing Heart of Middle Life—Dr. W. D. Stroud, Philadelphia.

February 4:

4. The Use of Sulfonamides in General Practice —Dr. Harrison Flippin, Philadelphia.

February 11:

5. Surgery—Dr. R. B. Cattell, Lahey Clinic, Boston.

February 18:

6. Pediatrics—Advances in the Treatment of Infectious Diseases in Children—Dr. Charles F. McKhann, University of Michigan.

Fayetteville, every Thursday from January 22 to February 26—Veterans Hospital.

Clinics at 5 p. m., dinner at 7 p. m., lecture at 8 p. m.

January 22:

- 1. Diagnosis and Treatment of Common Diseases of the Gastro-Intestinal Tract—Dr. Walter C. Alvarez, Mayo Clinic.

January 29:

- 2. The Failing Heart of Middle Life—Dr. William D. Stroud, University of Pennsylvania.

February 5:

- 3. Endocrinology and Metabolism in General Practice—Dr. Charles E. Paullin, Atlanta, Ga.

February 12:

- 4. Orthopedic Problems of the General Practitioner—Dr. Custis Lee Hall, Washington, D. C.

February 19:

- 5. Advances in the Treatment of Infectious Diseases in Children—Dr. Charles F. McKhann, University of Michigan.

February 26:

- 6. Infectious Diseases of the Genito-Urinary Tract—Dr. P. S. Pelouze, University of Pennsylvania.

The programs and schedules for the courses at Raleigh and Kinston, which follow immediately after those held in Durham and Fayetteville, will be announced in the next number of the Journal.

Dr. D. A. MacPherson, of the Department of Bacteriology of the School of Medicine, attended a meeting of the Society of American Bacteriologists in Baltimore, December 28, 29, and 30.

Dr. James C. Andrews, of the Department of Biological Chemistry of the Medical School of the University of North Carolina, has been requested by the Editorial Board of the Annual Review of Biochemistry to write the review on "The Chemistry and Metabolism of the Compounds of Sulfur" for Volume XIII. The Annual Review of Biochemistry consists of reviews of the status of various topics in biological chemistry written by different research workers. These latter are selected by the editorial board for their familiarity with the topic under consideration.

Dr. James M. Mackintosh, who has held many important positions in public health in England and Scotland, including that of Chief Medical Officer of Scotland, and who is now Professor of Preventive Medicine at the University of Glasgow, was in Chapel Hill in December. Dr. Mackintosh gave a talk for the faculty and students of the Schools of Public Health and Medicine.

Dr. Donald H. Williams, Director of the Division of Venereal Disease Control in Vancouver, was in Chapel Hill the early part of December, and visited the School of Public Health.

A Seminar sponsored by the Division of Sanitary Engineering of the North Carolina State Board of Health, in connection with the new Hotel and Cafe Rules and Regulations, the new Code and the new score sheet and methods of grading, was held at Chapel Hill on December 12 and 13. The personnel of Health Units and Departments of the State and students of the School of Public Health attended the seminar.

Dr. Harold W. Brown, Dean of the School of Public Health, attended a meeting of the Association of Schools of Public Health in New York on December 20, 1941.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

The Bowman Gray School of Medicine has been selected as one of the institutions to conduct scientific research on the prevention and treatment of war wounds. For several months Dr. Herbert S. Wells of the Department of Physiology has, in collaboration with the National Research Council, been studying the prevention and treatment of shock. A grant of \$1250 has been awarded to Dr. Arthur Grollman, Research Professor of Medicine, by the Office of Scientific Research and Development for investigation of certain synthetic substitutes in medicine.

At the request of the Association of American Medical Colleges, the Bowman Gray School of Medicine has adopted a program which will allow medical students to graduate in three calendar years. The summer vacation will be eliminated, and school will be continuous over four quarters. The freshman class will begin work about June 15. A request to increase the enrollment will also be met.

Dr. Wingate M. Johnson, Clinical Professor of Medicine, has been made secretary of the new Section on General Practice of the American Medical Association.

The Private Diagnostic Clinic began operations January 1, with quarters on the first floor of the Medical School building. The following doctors constitute the personnel of the staff:

- Medicine:
- Dr. George T. Harrell, Jr.
 - Dr. Wingate M. Johnson
 - Dr. Robert L. McMillan
 - Dr. John R. Williams, Jr.

- General Surgery:
- Dr. Howard H. Bradshaw
 - Dr. William H. Sprunt
 - Dr. A. deT. Valk

- Neurosurgery:
- Dr. Henry G. Schwartz (After July 1st)

- Neuropsychiatry:
- Dr. Elbert A. MacMillan
 - Dr. John A. Rose

- Dermatology:
- Dr. William L. Kirby
- Obstetrics and Gynecology:
- Dr. Frank R. Lock

- Pediatrics:
- Dr. Leroy J. Butler

- Endocrinology:
- Dr. Arthur Grollman

- Orthopedics:
- Dr. Robert A. Moore

- Otolaryngology:
- Dr. James A. Harrill

- Ophthalmology:
- Dr. W. Paul Speas

- Urology:
- Dr. Fred K. Garvey

- Radiology:
- Dr. J. P. Rousseau

Mr. Clyde T. Hardy is Business Manager of the Clinic.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Dr. Carl V. Reynolds, State Health Officer, has received the following telegram from Dr. Thomas Parran, Surgeon General, United States Public Health Service:

"In view of the present emergency, urge proper officials in charge of domestic water supplies to take immediate steps against sabotage by excluding all unauthorized persons and visitors from water works properties, to provide guards at danger points and places where sabotage may interrupt continuous maintenance of supply and to set up chlorine dosages to maintain a residual sufficient to provide disinfecting action throughout the distributing system. Letter follows."

Replying, Dr. Reynolds telegraphed Dr. Parran:

"We raised chlorine residual content water plants over State last summer. Later we began insisting on pre and post chlorination in numerous sections and are now endeavoring to extend this over State. We are communicating your message re: precautions against sabotage by quickest methods. Await your letter containing further instructions. North Carolina State Board of Health, backed by press, radio and public sentiment, solidly behind you in all-out health program to cooperate with any emergency."

NORTH CAROLINA OBSTETRICAL AND GYNECOLOGICAL SOCIETY

The North Carolina Obstetrical and Gynecological Society held its annual winter meeting in Charlotte on December 5. The following program was given:

X-Ray Studies of the Pelvis and Fetal Pelvic Relationship (Case Reports)—O. Hunter Jones, Charlotte.

X-Ray Visualization of the Fallopian Tubes (Case Report)—W. Z. Bradford and Wallace B. Bradford, Charlotte.

Analysis of Cesarean Section in Charlotte—Ernest Franklin, Charlotte.

Use of X-Ray in Obstetrics—Oren Moore, Charlotte.

NORTH CAROLINA COUNCIL ON NURSING DEFENSE

A meeting of the Nursing Council on Defense, Katherine Rehder, Chairman, and Mrs. Marie B. Noell, Executive Secretary, was held at Headquarters Office of the North Carolina State Nurses' Association December 20, 1941, at 11 o'clock.

The immediate consideration of the Council is the recruitment of well-qualified young women for enrollment in good schools of nursing. January will be known as National Nursing Month. It is believed that many well-prepared prospective student nurses can be secured by having speakers visit all high schools and colleges in North Carolina.

The North Carolina League of Nursing Education is planning to encourage all nursing schools in the state to hold "Open House" for prospective student nurses.

The North Carolina Nursing Council on Defense will cooperate with the local Red Cross Chapters in training Volunteer Red Cross Nurses Aids Corps, giving Red Cross Home Nursing Courses and giving courses in First Aid.

The Council is urging all graduate registered nurses to register for volunteer services with the county defense councils volunteer service.

THIRD DISTRICT AND SAMPSON COUNTY MEDICAL SOCIETIES HOLD JOINT MEETING

The Third District Medical Society and the Sampson County Medical Society held a joint dinner meeting in Clinton on December 2. Following dinner, the scientific program was presented by Drs. Tinsley Harrison, H. H. Bradshaw, and LeRoy J. Butler, of the Bowman Gray School of Medicine of Wake Forest College. Dr. Harrison spoke on "Cardiovascular Emergencies", Dr. Bradshaw on "Cancer of the Lung", and Dr. Butler on "The Care of the Premature Infant". Short talks were also made by Dr. F. Webb Griffith, President of the State Medical Society; Dr. Roscoe McMillan, Secretary of the State Medical Society; Dr. John B. Wright of Raleigh, and Dr. J. B. Sidbury of Wilmington, past presidents of the State Medical Society; Dr. Wm. M. Copridge, President of the State Board of Medical Examiners; Dr. G. M. Cooper, Assistant State Health Officer; Brigadier General H. C. Coburn, Chief Medical Officer of Ft. Bragg; Col. E. D. Quinell, Chief Medical Officer of Camp Davis, and Dr. B. A. Cockerell, Chief Medical Officer of Veteran's Hospital, Fayetteville.

At the business session the following officers of the Third District Medical Society were elected for 1942: Dr. J. Street Brewer, Roseboro, President; Dr. A. N. Johnson, Garland, Vice President; Dr. W. P. Starling, Roseboro, Secretary-Treasurer. Dr. Starling was also elected President of the Sampson County Medical Society; Dr. J. M. Lee, Newton Grove, was elected Vice-President, and Dr. G. E. Best, Clinton, Secretary-Treasurer.

Officers of the Third District Medical Society for 1941 were Dr. W. C. Mebane, Wilmington, President, and Dr. S. C. Cox, Kerr, Secretary-Treasurer. Dr. W. Houston Moore, Wilmington, is Councilor of the Third District. Dr. J. H. Williams, Clinton, was President of the Sampson County Medical Society for 1941, and Dr. W. P. Starling was Secretary-Treasurer.

TENTH DISTRICT MEDICAL SOCIETY

The fall meeting of the Tenth District Medical Society was held in Burnsville on November 26. Among those who took part on the afternoon program were Drs. Frank C. Wood of Marion, C. N. Burton of Asheville, R. O. Jones of Burnsville, W. M. Russell, Julian A. Moore, G. F. Parker, Irma Henderson-Smiths, B. E. Morgan and J. H. Dougherty of Asheville, V. H. Duckett of Canton, W. E. Brockett of Hendersonville, and Roy C. Tatum of Knoxville, Tenn. Guest speakers at the dinner meeting were Dr. F. Webb Griffith of Asheville, Dr. Roscoe D. McMillan of Red Springs, and Dr. Oren Moore of Charlotte. Officers elected for 1941 were: Dr. B. E. Morgan of Asheville, President; Dr. Frank Wood of Marion, First Vice President; Dr. L. L. Williams of Spruce Pine, Second Vice President; Dr. J. R. Westmoreland of Canton, Third Vice President; Dr. J. L. McElroy of Marshall, Fourth Vice President; Dr. C. E. Hoover of Murphy, Fifth Vice President. Dr. D. M. McIntosh, Jr., was reelected Secretary-Treasurer.

Retiring officers of the society are: Dr. A. B. Greenwood of Asheville, President; Dr. Candler A. Willis of Enka, First Vice President; Dr. F. H. Richardson of Black Mountain, Second Vice President; Dr. E. W. Schoenheit of Asheville, Third Vice President; Dr. A. E. Gouge of Bakersville, Fourth Vice President; and Dr. R. O. Jones of Burnsville, Fifth Vice President.

BUNCOMBE COUNTY MEDICAL SOCIETY

At the first December meeting of the Buncombe County Medical Society, held on December 1, Dr. James H. Cherry gave a paper on "Vitalium Cup Hip Arthroplasty". The discussion of this paper was opened by Dr. George A. L. Inge of Knoxville, Tennessee, and Dr. John T. Saunders. Following the meeting a reception was held in the new clinic of Drs. Saunders and Cherry.

On December 15 the annual business meeting and banquet of the Society was held at the Biltmore Forest Country Club.

FORSYTH COUNTY MEDICAL SOCIETY

The annual business meeting of the Forsyth County Medical Society was held in Winston-Salem at the Robert E. Lee Hotel on December 9. Dr. Robert R. Garvey was elected President of the Society; Dr. Robert L. McMillan and Dr. W. deKalb Wylie, Vice Presidents; Dr. Carlton N. Adams, Secretary; and Dr. Howard Starling, Treasurer. Following the dinner and the business meeting Dr. Robert L. McMillan addressed the Society on "Typhus Fever, and the So-Called Q Fever".

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society met on December 12 at the Roanoke Rapids Hospital, Roanoke Rapids. Dr. Barnes Woodhall of Duke University presented a paper on "The Diagnosis and Treatment of Sciatica". Officers elected for 1942 were Dr. Robert F. Young of Halifax, President; Dr. W. G. Suitor of Weldon, Vice President; Dr. W. D. Hall of Roanoke Rapids, Secretary-Treasurer.

POLK COUNTY MEDICAL SOCIETY

At the December meeting of the Polk County Medical Society recent communications from the National Physicians' Committee were discussed, and Dr. William St. J. Jervy, who has been associated with his father, Dr. A. J. Jervy, since July, was received into membership.

RANDOLPH COUNTY MEDICAL SOCIETY

The members of the Randolph County Medical Society and their wives met at the home of Dr. and Mrs. R. P. Sykes in Asheboro for the annual banquet and election of officers on December 3. The following officers were elected for 1942: Dr. Tiffany Barnes of Asheboro, President; Dr. M. B. Smith of Ramseur, Vice President; Dr. Dennis B. Fox of Randleman, Secretary-Treasurer; Dr. J. H. Soady of Asheboro, Delegate to the State Medical Society; and Dr. G. H. Sumner of Asheboro, Alternate.

UNION COUNTY MEDICAL SOCIETY

The Union County Medical Society held its annual meeting for the election of officers on December 8. Dr. J. G. Faulk was elected President, succeeding Dr. Clem Ham; Dr. F. N. Andrews, First Vice President; Dr. C. A. Bolt, Second Vice President; Dr. W. M. Love, Secretary; and Dr. J. W. Ormand, Delegate to the State Medical Society, with Dr. J. J. Goudelock as alternate.

WATTS HOSPITAL

The annual meeting of the former members of the Resident Staff of the Watts Hospital in Durham was held on Friday, December 5, at the Hospital. There was an unusually good attendance of the former members of the staff. After the business session in the morning and a luncheon at the Hospital, the following program was presented at the scientific session in the afternoon:

The Value of Gastroscopy in Demonstrating Small Stomach Lesions—Dr. W. W. Vaughan, Radiologist, Watts Hospital.

Malignant Tumor of Thymus Gland—A Report of a Case—Dr. E. B. Cekada, Durham.

The Diagnosis and Treatment of Tularemia—Dr. Davis L. Moore, Winterville.

Prognosis and Results of Treatment of Portal Cirrhosis—Dr. Ralph G. Fleming, Mayo Clinic.

Pathology of the Adrenal Glands — Dr. Arthur Grollman, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

MISSISSIPPI VALLEY MEDICAL SOCIETY 1942 ESSAY CONTEST

The Mississippi Valley Medical Society offers annually a cash prize of \$100.00, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association who are residents of the United States. The winner will be invited to present his contribution before the next annual meeting of the Mississippi Valley Medical Society at Quincy, Illinois, September 30, October 1, 2, 1942, the Society reserving the exclusive right to publish the essay first in its official publication—the Mississippi Valley Medical Journal (incorporating the Radiological Review). All contributions shall not exceed 5000 words, be typewritten in English in manuscript form, submitted in five copies and must be received not later than May 1, 1942. The winning essay of the 1941 contest appears in the January, 1942, issue of the Mississippi Valley Medical Journal (Quincy, Illinois). Further details may be secured from

Harold Swanberg, M.D., Secretary,
Mississippi Valley Medical Society,
209-224 W. C. U. Building, Quincy, Illinois.

POSTGRADUATE COURSES IN OBSTETRICS

Five postgraduate courses in obstetrics, each of four weeks' duration, will be offered at the Chicago Lying-In Hospital between January 12 and June 6, 1942. These are sponsored by the Illinois State Department of Health and the Children's Bureau of the U. S. Department of Labor. The features of the program consist of observations on current managements of normal and abnormal states of the pregnant, parturient, and puerperal patient. Lectures, demonstrations, clinics, and other teaching means augment the operating room and birth room observations, and ward round discourses. The course is run on a non-profit basis. A deposit of \$25.00 is required on registration, \$10.00 of which is refunded at the completion of the course. All the members of the department participate in giving the courses. Additional information and application blanks may be obtained by request from Postgraduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Avenue, Chicago, Illinois.

OFFICE OF CIVILIAN DEFENSE

The national emergency has brought about a shortage of nurses in hospitals, clinics, public health and field nursing agencies. To relieve this situation, which is likely to grow more acute with the expansion of military establishments and of plans for civilian defense, the American National Red Cross and the Office of Civilian Defense have jointly undertaken a project to train volunteer nurses' aides. With such assistance, graduate nurses may extend their services to many more persons. The volunteer aides will work under supervision of a nurse and are being trained for certain nontechnical tasks in order that graduate nurses may be released for the highly technical duties they alone are qualified to perform.

SANITARY REQUIREMENTS FOR SCHOOL LUNCHES

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, recognizing the increasing importance of school lunches, adopted a statement on the sanitary requirements for school lunches at its regular annual meeting, held at Atlantic City, February 25, 26, 1941.

Single copies of this statement are distributed gratis by the Joint Committee through its Secretary, W. W. Bauer, M.D., 535 North Dearborn Street, Chicago. Quantities will be furnished at actual cost; prices quoted on request. Requests for free copies must be made on the official letterheads of school systems or public health agencies.

FOURTEENTH ANNIVERSARY ISSUE OF THE HEBREW MEDICAL JOURNAL

The attention of the medical profession is directed to the appearance of a special issue (Volume I, 1941) of *The Hebrew Medical Journal* (*Harofe Haivri*), a semi-annual publication, edited by Moses Einhorn, M.D. This volume commemorates the fourteenth anniversary of this Journal, and presents a valuable symposium on "Diabetes Among Jews." The participants of the symposium are medical men with prominent reputations in their field. They include such men as Drs. Joslin, Morrison, Frederick F. Allen, A. Rudy, A. J. Rongy, Charles R. Bolduan, A. A. Epstein, and others.

In addition to an English-Hebrew medical dictionary, the original articles are summarized in English, to make them available to those who are unable to read Hebrew.

For further information, communicate with the editorial office of *The Hebrew Medical Journal*, 983 Park Avenue, New York City.

NEWS NOTES

Dr. W. J. Lackey of Fallston is Chairman of the Section on General Practice which was organized at the 1941 meeting of the Southern Medical Association.

* * *

Dr. Roland Bellows of Charlotte has been certified by the American Board of Neurological Surgery.

* * *

Dr. Samuel P. Ravenel of Greensboro spoke before the Marlboro County Medical Society, meeting at Bennettsville, South Carolina, on January 7. His subject was "Practical Points in Pediatric Practice". Dr. Robert A. Ross of Durham and Dr. Harry Winkler of Charlotte discussed other papers given at this meeting.

Dr. Thomas Huffines of Asheville has been made a Fellow of the American College of Surgeons.

* * *

Dr. William Earle Grady of Tryon died on December 9, 1941.

* * *

Dr. William Henry Pettus, Jr., surgical resident at Duke Hospital from 1937 to 1941, has moved to Charlotte to be associated with Dr. Marvin Scruggs and Dr. L. E. Fleming in the practice of surgery.

* * *

Dr. J. P. U. McLeod of Marshville has announced that the "McLeod Clinic", opened October 4, 1941, was accepted for full membership in the North Carolina Hospital Association on December 4.

* * *

Dr. Upshur Higginbotham has moved from Roanoke Rapids to Montgomery, West Virginia, where he will be medical chief in one of the local hospitals.

* * *

Dr. Philip B. Parsons has moved from Charlotte to Norfolk, Virginia, where he will continue the practice of radiology.

* * *

Dr. Foy Roberson of Durham was elected Vice President of the Southern Surgical Association at its recent meeting in Pinehurst.

* * *

Dr. Oren Moore of Charlotte spoke before the Third District Medical Society of South Carolina on November 18 at the State Training School, Clinton, South Carolina. His subject was "Minor Disorders of Pregnancy".

A lucrative field is left open by the death of a general practitioner: an attractive clinic and equipment for rent in a field that will yield \$1,000 a month to the right person. If interested, communicate with Mrs. T. A. Smith, 2226 Plaza, Charlotte, North Carolina.

The "Sulfa" Drugs

In 1937 sulfanilamide became available generally and proved to be extremely useful in the treatment of infections due to *B. hemolytic streptococci* and *meningococci*. In addition, the drug soon was being employed in urinary tract infections, trachoma, chancroid, lymphogranuloma venereum, and certain cases of gas gangrene, and it demonstrated some benefit in gonorrhea, undulant fever, and actinomycosis. Approximately two years later sulfapyridine was being widely used in the treatment of pneumococcal infections and was found to be more effective than sulfanilamide against gonococci. After only another year sulfathiazole began to replace sulfapyridine because it was as effective against pneumococci and gonococci, more effective against staphylococci, and occasioned fewer reactions. In urinary tract infections sulfathiazole was superior to sulfanilamide in most cases. Now sulfadiazine is being introduced and it has the advantage of a lower index of toxicity, which makes possible the maintenance of high blood levels.

This group of drugs has become exceedingly widely employed. Soon there will be only a small proportion of the general population which has not received one of them as treatment of some variety of infection (South. M. J., 34:1214, 1941). It behooves the physician to choose carefully the most specific and least toxic one for his case. A wide variety of dosage forms have been made available by Eli Lilly and Company.

AUXILIARY

HISTORY OF THE STUDENT LOAN FUND

The possibility of creating a loan fund to provide for the education of the children of North Carolina doctors who by some circumstance might need a temporary loan was first discussed by the Auxiliary in May, 1930. Three years later, in Raleigh, April, 1933, the Auxiliary Loan Fund came into being.

At the present time, the Auxiliary, acting through its Executive Board, appoints a Loan Committee of three members, and no loan is made from the Student Loan Fund until approved by the Loan Committee. The Committee at the present time is composed of Mrs. John S. Hooker, Chairman of the Student Loan Fund; Mrs. Sidney Smith, President of the Auxiliary; and Mrs. E. C. Judd, Treasurer of the Auxiliary. The members of the Loan Committee serve for a period of two years each.

Loans from this fund are available to sons and daughters of North Carolina doctors and are limited to \$100.00 per year for two years to one individual. For each loan the borrower gives a note to the Auxiliary, signed by himself, his parents, and two other sureties. The note is payable on or before one year after the date of graduation, with interest from the maturity of the note at the rate of 5 per cent per annum, subject to the provision that no interest shall be charged if the note is paid promptly at maturity.

The Auxiliary goal for the fund is \$10,000, but the fund at present is \$630.04. In the past eight years the fund has been made available to:

Miss Genevieve Whittington of Snow Hill
—1935

Miss Margaret Knight of Greensboro—
1935, 1936

Miss Eula Grace Whittington of Snow Hill—1936

Miss Margaret Whittington of Snow Hill
—1937

At the present time Charles Highsmith of Dunn, who is at George Washington University, and Charles Whittington of Snow Hill, who is a Senior at State College, both have loans.

County auxiliaries and doctors' wives who are members-at-large are urged to make generous contributions to the Student Loan Fund to enable this fund to widen its benefits.

In Memoriam

CASPER WALKER JENNINGS, M. D.

It is with a profound sense of loss that we record the passing of a true and trusted friend. Casper Walker Jennings was born in Danville, Virginia, November 11, 1893. At the age of 5 years he moved to Greensboro with his family. After graduating from Greensboro High School he entered the Medical College of Virginia, where he received the degree of Doctor of Medicine in 1916. He did general practice in West Virginia for two years, at the end of which time he entered Manhattan Eye, Ear, Nose and Throat Hospital, where he did special work for one year. In 1920 he established practice in his specialty in Hot Springs, Arkansas. Five years later he returned to Greensboro, where he remained until his death, November 22, 1941.

Dr. Jennings, or "Casper" as we all affectionately called him, took every opportunity to improve his knowledge. He frequently took time off from a busy practice to attend clinics and seminars in the medical centers. He seldom missed a meeting of this Society. He was past president of the North Carolina Otolaryngological Society. He was a member of the American Medical Association, the Medical Society of the State of North Carolina, and the Guilford County Medical Society, and for a number of years was the very able treasurer of this society. In 1918 he was married to Miss Marjorie Lea, to which union three children were born. Casper was a popular member and past president of the Greensboro Lions Club.

His pleasing personality, ready wit and unflinching loyalty won for him a warm spot in the hearts of all who knew him. Though his familiar, friendly, and often homespun witticisms were known and appreciated by all his friends, and though his jovial disposition bespoke a "happy-go-lucky", care-free attitude, he was a man of firm conviction, and when the occasion arose he did not hesitate to stand for what was right. The affection with which his memory is cherished by all who knew him is his noblest monument. We, his associates, his friends, join his family in mourning his untimely departure.

—The Guilford County Medical Society.

BOOK REVIEWS

Occupational Diseases, Diagnosis, Medico-legal Aspects and Treatment. By Rutherford T. Johnstone, A.B., M.D., Director of the Department of Occupational Diseases, Golden State Hospital, Los Angeles, California; Formerly Assistant Professor of Medicine, University of Pittsburgh School of Medicine. 558 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1941.

The modern growth of industrial activity has rendered some knowledge of occupational diseases essential even to the general practitioner. This is particularly true in areas like North Carolina, which in recent years has been converted from a purely agrarian to a semi-industrialized region. The first part of the present volume is devoted to the legal aspects of Workmen's Compensation as related to the physician. There follow sections dealing with the effects of gases, solvents and fumes, metals and dusts. Chapters are devoted to such disorders as hernia, backache, dermatoses, and cancer, associated with certain occupations. The final section deals with medicolegal relationships of trauma to disease, malingering, and pre-employment examination. Any physician whose practice includes patients in industrial employment will find in the present volume a lucid presentation of important practical problems which are usually not stressed in the conventional medical texts.

A Primer for Diabetic Patients. By Russell M. Wilder. Ed. 7, 184 pages. Price, \$1.75. Philadelphia and London: W. B. Saunders Co., 1941.

The successful management of any case of diabetes is dependent not only on the physician but also on the patient's intelligence and capacity to follow the necessary dietary, therapeutic and hygienic regimen. It is for this reason that education of the diabetic is an essential part of treatment. Wilder's little book is intended to aid in this process. It is written in a clear and non-technical language and should admirably fulfill the purpose for which it was written. The present edition includes the practice introduced by Lawrence, Archer and Graham of London, of injecting both protamine zinc and regular insulin through the same syringe. This is now a routine procedure in the larger clinics, but in the reviewer's experience has not been adopted, as it should be, in diabetic practice generally.

Acknowledgment of Diabetes.—Diabetes should be acknowledged by those who have it. It is not a disease to be ashamed of unless one has been informed that he or she is hereditarily disposed and yet has become fat. One in four of all the people in the country has a diabetic relative.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:590 (April 3) 1941.

Gastrointestinal Upsets in Patients Taking Insulin.—Gastrointestinal upsets often are the precursors of a reaction. During such episodes, patients should always take some carbohydrate at frequent intervals, electing the form that can be best retained—tea or coffee with sugar, milk and Vichy water, ginger ale or similar preparations.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:590 (April 3) 1941.

VOLUME 2

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SYMPOSIUM ON ULCERATIVE LESIONS OF THE COLON

THE DIAGNOSIS AND TREATMENT OF INTESTINAL TUBERCULOSIS,

C. D. THOMAS, M. D.
SANATORIUM

Until comparatively recent times, the development of intestinal tuberculosis in patients with pulmonary disease has been considered a hopeless complication. Modern methods of treatment, however, have gradually improved the prognosis, and most cases in which the condition is recognized early and some of the more advanced cases may completely recover. The symptoms of intestinal tuberculosis are often indefinite and require careful study to determine their cause. The symptoms may be due to the toxemia of the pulmonary disease, to definite intestinal involvement, or to some condition entirely unrelated to the tuberculosis.

A review of the literature indicates that the great majority of patients with pulmonary disease who come to autopsy also have intestinal involvement. Most authors report that 70 to 80 per cent of patients dying with pulmonary tuberculosis are found to have this complication. Cullen⁽¹⁾ reports that in 1043 autopsies on tuberculous subjects, 70.4 per cent were found to have intestinal tuberculosis. He found that the incidence was highest from 10 to 19 years of age and was gradually reduced after 30 years; that the disease was more frequent in females than in males, and among those having a caseous-pneumonic type of pulmonary lesion than among those with the chronic hematogenous type. Careful studies of sanatorium patients

reveal that only 3 to 28 per cent have definite intestinal involvement⁽²⁾.

Berghoff⁽³⁾ has listed as predisposing factors constipation with stagnation, and pre-existing colitis caused by local trauma and trophic changes.

There is no uniformity of opinion concerning the development of intestinal tuberculosis. Archibald⁽⁴⁾ considered the hematogenous route the most likely, while Goldberg, Sweany and Brown⁽⁵⁾ felt that the lymphatic route probably was responsible for the greater number of cases. Cullen⁽¹⁾ states that the incidence of intestinal involvement varies directly with the number of tubercle bacilli in the sputum. He also states that a high percentage of patients die of miliary tuberculosis who have intestinal disease (63.8 per cent), and that the hematogenous route of spread is probably more common than is usually believed.

Bockus, Tumen and Kornblum⁽⁶⁾ have reported two cases of primary tuberculosis of the intestine without pulmonary involvement. They state that few primary cases occur after 8 years of age, and that most of them are caused by the bovine type of the organism.

Intestinal tuberculosis is generally divided into three types: hypertrophic, sclerotic and ulcerative.

Hypertrophic lesions are almost always

2. (a) McConkey, M.: Cod Liver Oil and Tomato Juice in the Prophylaxis of Intestinal Tuberculosis, *Am. Rev. Tuberc.* 43:425 (March) 1941.
(b) Brown and Sampson: The Early Roentgen Diagnosis of Ulcerative Tuberculous Colitis, *Am. J. Roentgenol.* 6:623, 1919.
3. Berghoff, R. S.: Intestinal Tuberculosis, *Ann. Int. Med.* 2:59 (July) 1928.
4. Archibald, E. W.: Surgical Treatment of Ulcerative Intestinal Tuberculosis, *Canad. M. A. J.* 10:804 (September) 1920.
5. Goldberg, B.; Sweany, H. C.; and Brown, R. W.: Pathological Studies on Tuberculous Enteritis, *Am. Rev. Tuberc.* 18:714 (December) 1928.
6. Bockus, Tumen and Kornblum: Diffuse Primary Tuberculous Enterocolitis: A Report of Two Cases, *Ann. Int. Med.* 13:1461 (February) 1910.

Presented before the Regional Meeting of the American College of Physicians, Chapel Hill, October 31, 1941.

1. Cullen, J. H.: Intestinal Tuberculosis—A Clinical Pathological Study, *Quart. Bull. Sea View Hospital*, 5:143, (January) 1940.

found in the cecum. Brown⁽⁷⁾ and Dowdle⁽⁸⁾ report these as tuberculomas and state that they are very difficult to differentiate from new growths involving the same area.

The sclerotic or fibrous type is probably secondary to ulceration, and by thickening and fibrosis of the intestinal wall tends to produce annular constriction and stenosis.

By far the most common type of lesion is the ulcerative. The most common site of ulcers is in the ileocecal region. Brown and Sampson⁽⁹⁾ have found this area to be involved in 85 per cent of all cases, although the lesions may occur anywhere from the stomach to the rectum. In the ileum the ulcers occur with their long axis to the axis of the bowel, while in the colon they tend to encircle the bowel. They may begin as mere abrasions with tubercle formation, caseation and ulceration, and then coalesce with others to produce large ulcers. They tend to heal by fibrosis.

The diagnosis of intestinal tuberculosis depends largely on the symptoms presented and upon x-ray examination of the gastro-intestinal tract. The demonstration of virulent tubercle bacilli in the stool in the absence of pulmonary disease justifies a diagnosis of tuberculosis of the intestine⁽⁶⁾, but in the presence of pulmonary disease it is of no value⁽¹⁰⁾.

Patients with pulmonary tuberculosis are prone to have many gastro-intestinal symptoms which are due to the toxemia of the disease and to the long periods of bed rest. Symptoms suggestive of beginning intestinal tuberculosis are nervousness and irritability, constipation in one who formerly had regular habits, loss of appetite, discomfort after meals, a sensation that the stomach becomes filled after very little food, flatulence, and fever which is not explained by the progress of the pulmonary lesion.

As the disease becomes more advanced the symptoms are more definite. The patient has alternating diarrhea and constipation, anorexia, nausea, vomiting, abdominal pain and tenderness, foul smelling stools, and emaciation.

The most reliable diagnostic aid is gastro-intestinal x-ray examination by barium meal.

Brown and Sampson⁽⁹⁾ have noted the inability of the diseased portions of the intestine to fill with the meal, and hypermotility of the same area and general hyperfunction of the entire tract. X-ray films should be made seven, eight, ten and twenty-four hours after the barium meal, and it has been our practice to make a fluoroscopic examination every hour, starting at the fourth or fifth hour, as this will occasionally demonstrate filling defects which might have been missed on the x-ray plates. The barium enema will often add valuable information in questionable cases although it is not sufficiently accurate to make a diagnosis except in advanced cases.

The differential diagnosis includes consideration of chronic ulcerative colitis, particularly of the regional or localized type; ulceration from *Endameba histolytica*; appendicitis; gastric disorders such as peptic ulcer and achylia gastrica; nutritional disorders such as pernicious anemia and pellagra; hyperthyroidism; poisoning by lead or arsenic; gastric symptoms following left phrenic nerve operation; multiple intestinal polyposis; diverticulosis and diverticulitis; malignant and benign tumors; and some of the rare colonic diseases.

Among the complications which have been attributed to intestinal tuberculosis are many unusual conditions. In our own experience mild intestinal hemorrhages, localized peritonitis, localized abscess and perforation have occurred. In addition to these, mixed infection, stricture, generalized tuberculous peritonitis, miliary tuberculosis, amyloid disease, intussusception, and carcinoma have been reported⁽¹⁰⁾. Practically all of these complications occur in late stages of the disease and change very little the final outcome of a case.

The treatment of hypertrophic and sclerotic types of tuberculous colitis is largely surgical. Both types cause partial or complete intestinal obstruction.

The treatment of the ulcerative type is a medical problem which is not yet solved. Complete bed rest with control of the pulmonary lesion by appropriate measures is by far the most important part of treatment. In many patients admitted to the Sanatorium with definite intestinal tuberculosis all intestinal symptoms have disappeared and the gastro-intestinal x-rays have returned to nor-

7. Brown, P. W.: Tuberculomas of the Bowel, *Surg. Clinics N. America* 1:369 (April) 1924.

8. Dowdle, E.: Tuberculosis of the Descending Colon; Chronic Hyperplastic Tuberculosis, *Ann. Surg.* 91:786 (May) 1930.

9. Brown, L. and Sampson, H. L.: *Intestinal Tuberculosis*, ed. 2, Philadelphia, Lea & Febiger, 1930.

10. Blumberg, A.: *Pathology of Intestinal Tuberculosis*, J. Lab. and Clin. Med. 13:495 (February) 1928.

mal after the sputum has been rendered negative by collapse therapy.

The next most important item of treatment is the diet. It should contain 2500 to 3000 calories per day, and have very little residue. During exacerbations of symptoms the diet should be largely liquids, given in small amounts at frequent intervals.

McConkey⁽¹¹⁾ first reported the use of vitamins A, D and C in the form of cod liver oil and tomato juice ($\frac{1}{2}$ oz. of cod liver oil in 3 oz. of tomato juice twice daily) in the treatment of the disease and this method has been generally accepted. He recently has reported on the use of the same preparation as a prophylactic measure^(2a). It has reduced the incidence of intestinal involvement from 10.7 per cent to 1 per cent, and the wider use of vitamin products has apparently reduced the incidence among patients on admission.

The advantages of heliotherapy and ultraviolet radiation have been a much discussed subject. It is our opinion that any benefits derived from their use are overshadowed by the harm which might come to the patient from breaking his rest by frequent moving and manipulation. If the treatment can be given without this interruption of his rest, and if his chest is not exposed it is probably of definite benefit.

Pneumoperitoneum, or the instillation of oxygen or air into the peritoneal cavity, has been reported to give relief of all symptoms⁽¹²⁾. In our experience it has given marked relief to some patients, but only partial relief to others. If this procedure is indicated in the treatment of the pulmonary lesion it should be used, but it has too many dangers to be used only for the relief of abdominal distress. Patients may develop generalized tuberculous peritonitis and rupture of the intestine with its usual fatal result.

A 10 per cent solution of calcium gluconate or chloride given intravenously in 10 cc. doses once or twice weekly and supplemented by calcium lactate, calcium gluconate or dicalcium phosphate in 1 or 2 Gm. doses three times a day by mouth will often give marked symptomatic relief, particularly of indefinite pain and discomfort.

Castor oil in small doses about once a week will bring symptomatic relief to many pa-

tients during exacerbations of flatulence, pain, mild diarrhea or general abdominal discomfort. Many patients will ask for such unpleasant medication.

In the severe cases treatment must be directed toward the relief of specific symptoms. Bismuth subnitrate in 1 or 2 Gm. doses will often aid in controlling diarrhea. Trasentin⁽¹³⁾ in doses of 75 mg. three times daily has been reported to control pain. In our own experience it has not been very satisfactory, but has given relief to some of the milder cases. Paregoric and laudanum may become necessary for the control of pain and diarrhea, but should be used with caution. Glucose in the 50 per cent solution given intravenously will occasionally relieve severe nausea, at least temporarily. If nausea and vomiting are both present normal saline and glucose intravenously will prevent the patient from becoming dehydrated.

Since so many different treatments are advocated, it is readily seen that none are entirely satisfactory. Therefore the greatest effort should be toward prevention and early diagnosis. Every case of pulmonary disease should be diagnosed as early as possible, and should be controlled by appropriate methods of treatment, so that there will be less chance of intestinal involvement.

13. Cherry, Homer H.: Symptomatic Treatment of Intestinal Tuberculosis with Trasentin, *Am. Rev. Tuberc.* 52:133 (July) 1940.

CONCEPTS AS TO THE ETIOLOGY OF NON-SPECIFIC ULCERATIVE COLITIS

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Under various names, the clinical and pathological pictures of ulcerative colitis have been established for eighty years or more, and the more recent radiological picture is usually quite definite. This disease is not restricted to any age, although it is more common in the second, third and fourth decades; nor to one sex, although it seems a little more common among males; nor to any season, although a few more cases originate in January, February and July than in other months; nor to any geographic zone⁽¹⁾. It is neither infective nor epidemic, and rarely if ever does more than one case

11. McConkey, Mack: The Treatment of Intestinal Tuberculosis with Cod Liver Oil and Tomato Juice, *Am. Rev. Tuberc.* 21:827 (May) 1930.

12. Salkin, David: Pneumoperitoneum in Intestinal Tuberculosis, *Am. Rev. Tuberc.* 53:485 (April) 1936.

1. (a) Paulson, M.: Present Status of Idiopathic Ulcerative Colitis, *J. A. M. A.* 101:1087 (November 25) 1933; (b) Bargen, J. A., et al.: Studies on Life Histories of Patients With Chronic Ulcerative Colitis, *Ann. Int. Med.* 12:330 (September) 1938.

occur in the same family. The incidence is said to be steadily increasing, but I have been unable to secure statistical data to confirm this statement. About 40 per cent of patients become symptom-free, about 35 per cent improve, and about 25 per cent get progressively worse or die^(1b).

Predisposing factors are as vague and inconsistent as are etiological factors^(1b). Upper respiratory infections mark the initial onset in about 12 per cent of the cases, and precipitate exacerbations in about 16 per cent. In smaller groups (3 to 4 per cent each), the onset or the flare-ups coincide with 'physical fatigue or mental shock', with dietary indiscretion, with pregnancy, or with exposure to epidemic dysentery.

Most investigators have sought for some pathogenic agent which accounts for the disease. In the normal human being, the colon is inhabited predominantly by bacilli, and the ileum harbors cocci. Diarrhea of any sort will mechanically cause more viable cocci to be in the stool than are present under normal conditions. The presence of blood favors the growth of such cocci, and inhibits the growth of the bacilli. A bloody diarrhea is thus particularly apt to produce a preponderance of abnormal bacteria in the stool⁽²⁾.

The bacteria which have been incriminated as etiological agents in this disease are too numerous for individual discussion. Among the bacilli mentioned are *B. pyocyaneus*, *B. lactis-aerogenes*, *B. mucosus-capsulatus*, *Salmonella paratyphoid-B*, *Shigella dysenteriae*, and even the normally saprophytic *B. coli*; the list of cocci includes enterococci, diplococci, streptococci, pneumococci, and staphylococci; among the anaerobic organisms, *actinomyces necrophorus* has been particularly accused; among the fungi, *Geotrichum* and *Monilia albicans* have been thought important; and finally, among the parasites, *Endameba histolytica* and *Balantidium coli* have been considered significant. Experimentally, none of these organisms have sufficed to produce the disease. Several of them are so often mentioned that they merit further discussion.

Hurst⁽³⁾ in 1921 suggested that ulcerative colitis was a chronic infection due to *Shigella dysenteriae*, as evidenced by recovery of or-

ganisms from the stool of many patients, and by positive blood agglutination tests in others. Mackie⁽⁴⁾ has shown that infection by strains of *Escherichia coli* may produce these agglutinins, which are not specific and are often present in the absence of demonstrable dysentery infection. In the New York area, about 20 per cent of ulcerative colitis patients harbor dysentery organisms in their stools.

It is generally considered that in about 5 per cent of the cases of ulcerative colitis *Endameba histolytica* is present in the stools, and that these cases are amenable to specific anti-amebic therapy. Most authors exclude patients who harbor either amebae or dysentery organisms from the group generally classed as 'non-specific' or 'idiopathic' ulcerative colitis.

Bargen⁽⁵⁾ in 1924 reported the identification, more often by stained smear than by culture, of a diplococcus in the stools of a majority of his patients. He considered this the etiological agent. There is widespread disagreement with this belief, because different strains of the organism obtained from Dr. Bargen by other investigators vary in cultural behavior, in resistance to heat, and in serological characteristics, while there is a close immunological relationship with strains of enterococci⁽⁶⁾. Others have been unable to find the organism in a majority of their patients⁽⁷⁾. There seems to be little support for this theory outside of Bargen's clinic.

The anaerobic *actinomyces necrophorus* has been found by stool cultures to be present in 27 of 38 patients with chronic ulcerative colitis and in 7 of 28 patients with other types of diseased colons, and absent in all of 99 subjects with normal colons. Though this organism is lethal when administered parenterally to experimental animals it does not produce ulcerative colitis⁽⁸⁾.

Fungus studies of the stools were positive

1. Mackie, T. T.: (a) Specificity of Agglutinin Reaction for *Shigella Dysenteriae*; Agglutination in Chronic Bacillary Dysentery. *Arch. Int. Med.* 62:53 (November) 1935; (b) Medical Management of Chronic Ulcerative Colitis, *J. A. M. A.* 111:2971 (December 3) 1938.
2. Paulson, M., quoted by Howard, J. T.: Medical Affections of the Colon, *M. Clin. North America*, 21:1172 (September) 1937.
3. Hurst, A. F.: Ulcerative Colitis, *Guy's Hosp. Rep.* 71:26 (January) 1921.
4. Rafsky, H. A. and Manheims, P. J.: The Significance of the Bargen Organism as a Factor in Ulcerative Colitis, *Am. J. M. Sc.* 183:232, (February) 1932.
5. Dack, G. M., et al.: (a) Bacterium *Necrophorus* in Chronic Ulcerative Colitis, *J. A. M. A.* 106:7 (January 4) 1936; (b) Study of Bacterium *Necrophorus* in Chronic Ulcerative Colitis and of the Effect of Sulfanilamide in Treatment, *Am. J. Digest. Dis.* 6:305 (July) 1939.

in 87.5 per cent of patients with ulcerative colitis, and in only 33 per cent of control subjects. Geotrichum was most often found, and the occurrence of *Monilia albicans* was thought to predict a malignant course and possible fatal termination⁽⁹⁾.

The concurrence of upper respiratory infections with the onset or exacerbations of the disease has been mentioned, and it has been reported that if one or more organisms can be cultured both from the nasopharynx and from the rectosigmoid, an autogenous vaccine of such organisms is likely to prove very helpful in treatment⁽¹⁰⁾.

From the bowel contents or mucosa of patients exhibiting a positive Frei test, Paulson has isolated an antigen which produces the same skin reaction. He believes that this is evidence that the virus of lymphogranuloma venereum is of etiological importance in such cases⁽¹¹⁾.

Allergic factors seem to be important in a few cases. Experimentally, it is known that sensitization followed by exposure to a specific antigen produces an allergic inflammation, even to the point of necrosis. It is also recognized that inflammation favors the local fixation of such an antigen. Following such fixation, the administration of antigen either orally or parenterally results in the acute inflammatory response⁽¹²⁾. It would seem that allergy plays an important part in only an occasional case of ulcerative colitis.

Murray in 1930 and Sullivan in 1936 reported two small series of patients in which psychiatric investigation disclosed significant emotional disturbances, especially marital troubles, immediately before the onset of the colitis. Therapy along psychiatric lines was successful in relieving the symptoms. It has been suggested that such emotional disturbance produces through the sympathetic nervous system a hyperperistalsis of the

colon which produces surface digestion and destruction of the mucosa⁽¹³⁾.

Lium and Porter⁽¹⁴⁾ have recently reported experimental work on colonic explants in dogs which bears directly upon this point. Such an explant can be easily maintained in a healthy state by simple dressings. When severe spasm of a colonic explant was produced by mechanical irritation, by parasympathicomimetic drugs, or by Shiga toxin, there was a marked injurious effect upon the mucosa. An initial outpouring of mucus, followed by hyperemia and hemorrhage into the mucosa was commonly observed, and ulceration occurred in many instances. Over the area of these ulcers no mucus was secreted until healing had taken place. Even after apparent healing, the mucosa was more sensitive to trauma than it had been previously. Ischemia without muscular contraction, induced by posterior pituitary substance and light ether narcosis, did not produce such damage. These authors emphasize the importance of Virchow's observation in 1857, confirmed by their own autopsy studies, that the most severe lesions of ulcerative colitis occur in the rectum and extend along the tenial bands. These constitute the most powerful muscles of the colon.

The deficiency states commonly present with ulcerative colitis are thought by recent investigators to be the result, and not the cause of the disease⁽¹⁵⁾. Avitaminosis, iron-deficiency anemia, hypoproteinemia, dehydration, and electrolyte disturbances are expected. An abnormal capillary permeability due to calcium imbalance has been suggested as an etiological factor.

Felson has written a great deal about the excretory function of the colon, and believes that toxins, bacteria and viruses originating in other parts of the body pass through the intestinal mucosa. If the mucosa has previously been damaged—by dysentery infection, for example—he feels that such agents may produce ulcerative colitis. This is called

9. Swartz, J. H. and Jankelson, I. R.: Incidence of Fungi in Stools of Non-Specific Ulcerative Colitis, *Am. J. Digest. Dis.* 8:211 (June) 1941.
10. Weiss et al., in *J. Lab. and Clin. Med.* 26:1925, 1941.
11. Paulson, M.: (a) Intracutaneous Responses, Comparable to Positive Frei Reactions, With Colonic Exudate From Chronic Ulcerative Colitis Cases With Positive Frei Tests, *Am. J. Digest. Dis. and Nutrition*, 3:667 (November) 1936; (b) New Diagnostic Intradermal Reaction With Bowel Antigen Indicating Presence of Virus of Venereal Lymphogranuloma in Intestine and Differentiating Colitis Associated With That Virus, *J. A. M. A.* 109:1889 (December 4) 1937; (c) Diagnosis of Colitis Associated With the Virus of Lymphogranuloma Venereum by Bowel Antigen, *Am. J. Digest. Dis.* 5:534 (November) 1938; (d) The Commoner Diarrheas and Dysenteries of the Adult, *M. Clin. North America*, 23:519 (March) 1939.
12. (a) Andresen, A. F. R.: Gastrointestinal Manifestations of Food Allergy, *M. J. and Record*, 122:271 (September 2) 1925; Opie, E. L., in *Medicine*, 15:489, 1936; (c) Collins, E. N. and Pritchett, C. P.: Allergy as a Factor in Disturbances of the Gastro-Intestinal Tract, *M. Clin. North America*, 23:391 (March) 1938.

13. (a) Murray, C. D.: Psychogenic Factors in the Etiology of Ulcerative Colitis and Bloody Diarrhea, *Am. J. M. Sc.* 180:239 (August) 1930; (b) Sullivan, A. J.: Psychogenic Factors in Ulcerative Colitis, *Am. J. Digest. Dis. and Nutrition*, 2:551 (January) 1936; (c) Donald, C. J. and Brown, P. W.: Ulcerative Colitis, *Am. J. Digest. Dis.* 7:231 (June) 1940.
14. (a) Lium and Porter: Etiology of Ulcerative Colitis, *Arch. Int. Med.* 63:291 (February) 1939; (b) Lium: Etiology of Ulcerative Colitis, *Arch. Int. Med.* 63:210 (February) 1939; (c) Lium and Porter: Observations on the Etiology of Ulcerative Colitis, *Am. J. Path.* 15:73 (January) 1939.
15. (a) Mackie, T. T.: Ulcerative Colitis: Factor of Deficiency States, *J. A. M. A.* 104:175 (January 19) 1935; (b) Jankelson and McClure: Chronic Ulcerative Colitis: Deficiency States, *Rev. Gastroenterol.* 7:506 (November-December) 1940.

the "indirect hematogenous excretory mechanism"⁽¹⁶⁾.

Winkelstein⁽¹⁷⁾ concludes that ulcerative colitis is due in 5 per cent of cases to amebic infection, in 20 per cent to chronic bacillary dysentery, and in 75 per cent to unknown causes.

Paulson⁽¹⁸⁾ has more strictly defined the disease as follows: "Chronic ulcerative colitis is a colitis primarily due not to deficiency states, to the administration of metallic products such as mercury, to toxins as in food poisoning, or secondary to known disease. It is not that brought on by an established infectious agent such as the tubercle, dysentery or cholera bacilli, or by the protozoa *Endameba histolytica* or possibly *Balan-tidium coli*, or by the virus of lymphogranuloma venereum. It is not that type of colitis seen at autopsy as one of the terminal manifestations of a disease such as nephritis. In short, its etiology is still undetermined, and it cannot even be stated to be a distinct entity. . . . The condition appears as a syndrome, a set of symptoms occurring together and the sum of signs of a morbid state due to one or more unknown factors."

Conclusions

It is clear that no pathogenic agent has been identified as the cause of this disease. It is possible that allergy, through a modification of the Schwartzman phenomenon, might be the explanation. It seems more plausible, at the present time, that neuro-genic or toxic spasm of the colon musculature can produce an ulcerative, hemorrhagic inflammation of the mucosa, and that various secondary agents might exaggerate or perpetuate such a reaction, producing the typical pathological picture of necrosis and proliferation.

16. Felsen, J.: New Concepts of Colitis and Other Intestinal Infections. *Rev. Gastroenterol.* 8:8 (January-February) 1941.

17. Winkelstein, A.: Etiology and Therapy of Ulcerative Colitis. *Am. J. Digest. Dis. and Nutrition*, 3:39 (January) 1937.

18. Paulson, M.: Diagnostic Methods in Chronic Ulcerative Colitis. *Am. J. Clin. Path.* 11:588 (July) 1941.

"For my part I am still unconvinced that the family doctor is an anachronism. I still want somebody to save me from unsuitable or excessive specialist advice; I need someone to coordinate the findings of specialists and discount them if necessary; and above all I want someone who is willing to talk to me, at length, about my migraine, my little boy's delinquencies, my wife's recent strangeness, my baby's inoculation, and my daughter's desire to marry a man with asthma." *Lancet*, copied by the New York State Jour. of Med., Jan. 1940.

THE MANAGEMENT OF NON-SPECIFIC ULCERATIVE COLITIS

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CHARLOTTE

The recent literature on non-specific ulcerative colitis continues to demonstrate the controversial status of all phases of this problem. There is no unanimity of opinion as to its classification, etiology, natural history, prognosis or therapy. In discussing the treatment of this confused symptom complex, we find ourselves completely adrift upon a sea whose many islands are strewn with the wrecks of theories and cures alike. There are scarcely two authorities who would have us navigate this sea of confusion by the same chart. Should I not cry in the words of Rabbi Ben Ezra:

Now, who shall arbitrate?
Ten men love what I hate,
Shun what I follow, slight what I
receive;
Ten, who in ears and eyes
Match me: we all surmise,
They, this thing, and I, that:
whom shall my soul believe?

One thing stands out in the management of these cases: that until it is possible to point to the causative factor or factors in non-specific ulcerative colitis, the preliminary study must include a careful diagnosis and evaluation of all the factors that may enter into the picture of this disease. Until the specific organism of ulcerative colitis is isolated or the exact vitamin deficiency which is responsible is demonstrated or the allergic factor definitely established, it is best for the clinician to realize that he is thus far not treating a bacterium, an ameba or a virus, not solely replacing vitamins, not alone playing the role of an allergist, but that instead he is treating a complex human being with all the considerations, emotional and otherwise, that this implies.

There are two phases of ulcerative colitis that I wish to discuss. In the acute stage of this disease the patient is frequently a desperately ill individual, and immediate, energetic measures are necessary. Complete bed rest is, of course, an essential. If there has been a substantial blood loss from the bowel, replacement therapy by frequent transfusions is helpful. Indeed, even in the absence of marked anemia, transfusions are

helpful. Abdominal pain is at times severe enough to necessitate sedation. Powdered opium or codeine usually suffices to give symptomatic relief. Dehydration often is marked and fluids should be given in the form of normal saline, as the blood chlorides are frequently reduced. Plasma given intravenously is useful at this stage if hypoproteinemia and edema are present. It is difficult during this acute phase to keep the nutritional requirements adequately supplied, but every effort should be made to give sufficient food by mouth at least to tide the patient over this acute period. Most authorities have become cautious in advocating the use of such drugs as sulfanilamide and neoprontosil in the desperately ill individual. The use of sera or vaccines at this period of the disease depends in a large measure upon the physician's belief in the efficacy of sera and vaccines for this disease in general. In the acute stage perforation of the colon may occur, and this is a definite indication for immediate surgery.

The chronic phase of this disease taxes the ingenuity of the physician to the utmost. The gastric acidity should be determined. Many patients with ulcerative colitis have a low gastric acidity or a complete achlorhydria. Dilute hydrochloric acid, one-half teaspoonful in water at mealtimes, reduces the flatulence in such cases. Bed rest is essential. The word "rest" implies not only cessation of physical activity, but mental and emotional stabilization. This is, in my opinion, one of the most important phases in the treatment of these cases. We are all familiar with the physical and emotional make-up of the average ulcerative colitis patient. He is likely to be sensitive, high strung, introspective, and, as Sullivan suggests, emotionally immature. It is wise at an early period in the treatment to evaluate carefully the psychic factors which may be present. Such questions as "How is the world treating you in general?" may send the patient off into an account of his burdens and tribulations. It goes without saying that any lifting of the burden that the physician can effect should be done. Rest should be complete and prolonged, and if the economic status of the patient will permit, it is advisable to urge him when he returns to work to go into some field where competition, stress and strain are at a minimum.

"It sounds almost trite to suggest that the

diagnosis of non-specific ulcerative colitis should be unequivocally established as the first step in treatment. However, I have seen patients treated for non-specific ulcerative colitis who actually had an ulcerative polyposis. In other cases, involvement of the rectum by lymphogranuloma venereum was responsible for the frequent bloody stools. It is wise to run a Frei test on all ulcerative colitis cases. Although a discussion of the diagnosis and management of amebiasis is not within the scope of this paper, it should be stressed that the failure to demonstrate *Endameba histolytica*, even after repeated and careful studies, does not prove that it is not present. I think that an adequate clinical trial with some anti-amebic drug should always be given.

The diet is a difficult problem. Anorexia is almost always present, and to maintain adequate nutritional requirements at times defies the ingenuity of both the physician and dietitian. Often patients attribute their diarrhea to some one or many foods. When the patient is having eighteen or twenty stools a day, some of them are bound to come immediately after feedings. It falls upon the physician to convince the patient that the fanciful and deficient diet that he is imposing upon himself is unnecessary and harmful. Most authors agree that a diet high in calories, vitamins, and protein, and low in residue serves the purpose best⁽¹⁾. It is not important or even advisable to eliminate vegetables, but they should be thoroughly pureed. Frequent, small feedings allow a large total caloric intake over a twenty-four hour period.

In discussing the diet the question of allergy immediately comes up. There are those who feel that allergy plays an important role in the production of ulcerative colitis⁽²⁾. Other competent observers see no correlation. The possibility of allergy should be considered, and if possible, ruled out. It is more satisfactory to determine the patient's allergic response by elimination diets than by skin tests, as skin tests are notoriously misleading so far as allergies of the gastro-intestinal tract are concerned. Foods that have been most frequently incriminated

1. Donald, C. J., Jr., and Brown, F. W.: *Ulcerative Colitis*, *Am. J. Digest. Dis.*, 7:234 (June) 1940.
2. Mackie, T. T.: (a) Allergy in Ulcerative Colitis, *J. Am. Dietet. Assn.*, 14:177 (March) 1938; (b) Bacteriologic, Roentgenologic, and Clinical Study of Ulcerative Colitis, *Am. J. Digest. Dis. and Nutrition* 1:466 (September) 1934; (c) Medical Management of Chronic Ulcerative Colitis, *J. A. M. A.*, 111:2071 (December 3) 1938.

are milk, eggs, oranges, wheat, spinach and tomatoes. The average patient tolerates milk poorly, whether he is allergic to it or not. I eliminate milk entirely for the first two or three weeks.

It has been suggested that vitamin deficiency combined with infection contributes materially to the production of ulcerative colitis. Recent clinical and experimental studies have added much to our knowledge concerning vitamins. Vitamin B₁ has been shown to play an important role in appetite, in the production of hydrochloric acid in the stomach, and in the motor activity of the intestinal tract^(2b). It is probably necessary to broaden the scope of our known deficiency states to include more than scurvy, rickets, beriberi, pellagra, and xerophthalmia. Chronic vitamin deficiency probably leads to numerous vague border-line states which are not included in our existing nomenclature.

Mackie⁽³⁾ found that 62.6 per cent of his 75 reported cases of ulcerative colitis showed evidences of vitamin deficiency. Whether this deficiency precedes the changes in the bowel or whether it is produced by the diarrhea, dehydration and limited food intake is not entirely clear. However, it is probable that these deficiency states are secondary to the bowel changes. I have never seen a clear-cut deficiency state produce the characteristic lesion of ulcerative colitis. It is agreed by all, however, that vitamin replacement is important. Massive doses of vitamin D should be given. Some suggest the instillation of cod liver oil into the rectum. This is rarely if ever necessary, in my opinion. The marked hemorrhagic tendency which appears in this disease suggests the possible relation to a deficiency of vitamins C and K. Mackie and Eddy⁽⁴⁾ found vitamin C deficiency to be frequent, while Bergen and Vickers⁽⁵⁾ reported benefit from vitamin C in severe hemorrhagic cases. Ascorbic acid can be administered either orally or intravenously. Usually oral administration of 100 to 300 mg. a day is sufficient. Since there is often a lowered serum protein, with a correspondingly low prothrombin level, the administration of vitamin K may prove helpful. It is important to realize that vitamin deficiency may be demonstrated not only

by the quantitative determination of the vitamins and by the mucous membrane changes, but also by x-ray examination of the small bowel. Administration of the entire vitamin B complex is worth while. Yeast is not a satisfactory source of these vitamins, as it increases the abdominal distention. Cheney⁽⁶⁾ reported marked improvement in cases of ulcerative colitis following the use of the entire vitamin B complex and liver extract. Ferguson and Shiffer⁽⁷⁾ were unable to duplicate his results. There is no evidence that liver therapy in ulcerative colitis has any specific or uniformly beneficial results as it does in sprue. However, it does supply some vitamin B, and I think that its use is justified. The use of crude liver extract rather than reticulogen as reported by Cheney⁽⁶⁾ should be more efficacious if vitamin replacement is the important factor. If there is evidence that absorption from the small bowel is poor vitamins should be given parenterally or intravenously.

Of course sulfanilamide was sooner or later to be tried in ulcerative colitis. Collins⁽⁸⁾, as well as Brown and Bergen, has used sulfanilamide extensively. These writers conclude that some benefit results in the early stages of the disease or where the process is relatively mild. They advocate giving from 4 to 5 Gm., divided into five equal doses daily, and continuing this dosage from ten to fourteen days. The dangers of sulfanilamide in this disease have become more apparent with its widespread use. Severe toxic reactions have been numerous. Jaundice has been reported in many cases following the use of sulfanilamide. A toxic rash and a sharp increase in the pyrexia as well as an increase in the number of stools have also been noted. The consensus of opinion now is that sulfanilamide should not be used except in rare cases. When it is employed, the blood level of sulfanilamide should be determined at frequent intervals. The drug should be discontinued at the first sign of hepatitis. Because of the toxicity of sulfanilamide in these cases, neoprontosil has been substituted. It is a comparatively innocuous drug and there have been no reports of liver

3. Mackie, T. T.: Ulcerative Colitis: Factor of Deficiency States, *J. A. M. A.* 104:175 (January 19) 1935.

4. Mackie, T. T. and Eddy, W. H.: Paper read at the American Gastro-Enterological Meeting, May 2, 1939.

5. Vickers, P. M. and Bergen, J. A.: Index of Prognosis in Thrombo-Ulcerative Colitis, *Proc. Staff Meet. Mayo Clin.* 13:108 (June 29) 1938.

6. Cheney, G.: Injections of Highly Concentrated Liver Extract in the Treatment of Idiopathic Ulcerative Colitis, *Arch. Int. Med.* 63:813 (May) 1939.

7. Shiffer, Paul, and Ferguson, L. K.: Treatment of Idiopathic Ulcerative Colitis With Concentrated Liver Extract and Vitamin B₁, *Am. J. Digest. Dis.* 8:300 (August) 1941.

8. Collins, E. N.: Chronic Ulcerative Colitis: Sulfanilamide and Other Factors in Its Management, *S. Clin. North America*, 19:1089 (October) 1939.

damage. Bargaen⁽⁹⁾ reports very favorable response in his series of cases. However, the majority of other reports have not been so glowing. In fairness to Bargaen, however, it should be stressed that he did not claim that this was a specific agent but that it was a safe and helpful adjunct to vaccine or serum. I have not been impressed with its efficacy.

Sulfaguanidine, which has been heralded as an intestinal antiseptic, has been used in chronic ulcerative colitis. My personal experience with this drug has indicated that it is of no value at all. I have been able to find a few reports of small series of cases in which the drug appeared to be helpful. Kraemer⁽¹⁰⁾ reported splendid results in 15 cases. However, sulfaguanidine has been available, even for experimental use, for only a short period, and no accurate conclusions can be drawn as to its true value, since exacerbations and remissions are the usual course in this disease. There have been no undesirable effects from the use of sulfaguanidine in massive doses except for an occasional skin rash.

The use of sera and vaccines of various kinds has steadily lost favor in the past ten years. There has been much discussion of a specific diplostreptococcus, known as Bargaen's bacillus, as the primary etiological factor. This concept has not received universal acceptance, and the weight of opinion probably rests with the statement that this diplococcus, if indeed it is a single organism at all, is one of the predominating secondary invaders. Since Bargaen's original article⁽¹¹⁾ almost no competent observer has been able to isolate an organism which conformed consistently to the morphological, cultural and heat requirements that Bargaen set forth. Mackie^(2c) states that strains of the diplococcus received from the Mayo clinic have been found to differ among themselves in their behavior as to culture and heat resistance. More recently anaerobic bacteria, such as *actinomyces necrophorus*, have been advanced as primary agents. Most of the bacteria recoverable from the human colon have at one time or another been suggested as important etiological factors. Autogenous rather than stock vaccines should be used if

vaccines are employed at all. "The great variety of anti-bacterial measures advocated bears mute but impressive testimony to the inadequacy of all."^(2b) Miller⁽¹²⁾ states that protein shock seems helpful in some cases, and suggests that this is the explanation for the results Hurst⁽¹³⁾ obtained with anti-dysentery sera.

Colloidal aluminum hydroxide, kaolin, olive oil and azochloramide by rectal instillation have all had their day. I feel that they are not only useless but at times harmful. It is wise to stay out of the colon except for an occasional proctoscopic examination to determine the progress of the disease.

There is great difference of opinion as to the role that surgery should play in cases of ulcerative colitis. The position taken by most writers in regard to surgery depends in a large measure upon their opinion as to the efficacy of medical measures. As an illustration, in the Mayo Clinic since the advent of "specific therapy" the number of cases treated surgically has declined from 26 per cent in the period from 1919 to 1923 to 1.4 per cent from 1929 to 1936⁽¹⁴⁾. On the other hand, those who have had less favorable experience with medical management employ ileostomy and analogous processes in as many as 65 per cent of the patients with this disease⁽¹⁵⁾. Elsom and Ferguson⁽¹⁶⁾ in reporting two comparable groups of patients with non-specific ulcerative colitis have shown that those treated surgically have made, in most instances, dramatic recoveries. A great majority returned to their previous occupations and are leading, by their own definition, "a normal life." They report a 26 per cent mortality in the surgical group as compared with a 32 per cent mortality in the medical group. It should be stressed, however, that this relatively low surgical mortality was obtained through the cooperation of a medical and surgical team, which had experience and particular interest in this disease.

The indication for surgery may be either obligatory or optional. I would include among the absolute indications perforation

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of the colon, a fulminant type of the disease, and complications such as crippling generalized arthritis, repeated hemorrhage from the colon, and severe perirectal infections. Among the optional indications for surgery are failure to achieve clinical improvement, persistence or progression of the lesions as seen by proctoscopy, x-ray evidence of progressive fibrosis of the colon with pseudopolypoid degeneration of the mucosa, and progression of the complications attributable to chronic sepsis. The exact surgical procedure in these cases is not the subject of this paper. However, the operations frequently performed in the past such as appendicostomy, cecostomy, and double bowel colostomy are based on a false premise—namely, that medicated irrigation will eliminate the infection and that these procedures will produce physiologic rest of the colon. An ileostomy appears to be the surgical procedure of choice, as it completely diverts the fecal stream. At a subsequent time removal of the entire colon, preferably in three stages, may have to be carried out. Before surgery is entered upon, the patient should be thoroughly acquainted with the fact that in all probability he will have an ileostomy the rest of his days. It is only fair to acquaint him with the inconveniences of this fecal short-circuiting. In only the exceptional patient can the ileostomy be closed. I have, in the last several years, been more inclined to resort to surgery in these intractable cases, and have obtained excellent results.

AMEBIC DYSENTERY AS SEEN IN NORTH CAROLINA

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and

WILLIAM SCHULZE, M. D.

DURHAM

The high incidence of amebiasis in tropical and subtropical climates has long been recognized, and it is now generally accepted that amebic infection is common in the extreme Southern states. In fact, Craig and Faust have pointed out that 10 to 20 per cent of the population in these areas have cysts of *Endameba histolytica* in their stools. However, it is probable that few of us realize the prevalence of active amebic infection in

North Carolina, a state whose climate is far from tropical. Any patient who presents himself with a history of bloody diarrhea should always be suspected of having this disease until it is proven otherwise.

Material¹⁾

This report is based upon a study of 100 patients with active amebic infection who have been seen at Duke Hospital during the past ten years. The term "active amebic infection" refers only to those patients having ulcers, demonstrated by proctoscopic examination, from which motile amebae could be obtained; or to those having complications such as liver or lung abscess, from which the organisms were recovered, or in whom prompt recovery after specific therapy justified the diagnosis. Those patients having only cysts in their stools were purposely excluded from this study.

Clinical Aspects

The disease may occur in any decade of life. It is much more common in the male, and in this series was more often seen in the white race. The onset of the diarrhea is usually gradual but may be abrupt, and the clinical course is one of spontaneous remissions and exacerbations. In patients having active ulcers blood is almost invariably seen in the stool, and as a rule mucus is present. Other common symptoms are abdominal pain, weight loss, anorexia, and nausea and vomiting. The number of stools per day may vary from five to twenty. While such patients rarely feel well, many of them are able to continue at their work.

In uncomplicated cases the routine physical examination is not helpful in establishing the diagnosis. Occasionally one can elicit tenderness over the cecum or descending colon. The demonstration of liver involvement or of a lung abscess is, of course, of the greatest importance in those patients having such complications. The temperature and pulse are only slightly elevated in uncomplicated cases.

Diagnosis

The diagnosis can be made only by the proctoscopic demonstration of typical ulcers from which the active amebae are readily

1. Presented before the Gastro-Enterological Section of the Southern Medical Association in St. Louis on November 12, 1941, by Dr. William Schulze.

recovered, or by the finding of a liver or lung abscess. The mucus from the ulcers will almost always contain the trophozoites. These can be demonstrated readily by immediate examination on a slide in a drop of normal saline. A warm stage is totally unnecessary. Occasionally typical ulcers are observed and no amebae can be found. In such cases one must resort to the therapeutic test, and in our experience, failure of such ulcers to heal promptly under proper treatment usually means that they were non-amebic in origin. The proctoscopic picture of chronic idiopathic ulcerative colitis is totally different from that of amebic infection, and should cause no confusion. In fact, the only condition which really offers difficulty in differential diagnosis is the tuberculous ulcer, which may be isolated and surrounded by relatively normal mucous membranes, as is the ulcer of amebic dysentery.

Barium enema studies, although they are suggestive of amebic dysentery when there is spasm of the cecum or other parts of the colon, are rarely conclusive. Considered alone, they never justify the diagnosis. In fact, the barium enema is frequently reported as showing negative results in patients who have an active amebic dysentery.

Treatment

The patient with active amebic dysentery usually gives a rapid and dramatic response to proper treatment. After twenty-four to forty-eight hours of therapy he experiences a marked improvement in his sense of well-being; the diarrhea promptly subsides and the appetite returns. Within five to seven days the ulcers, as observed through the proctoscope, have healed. In general, the best results are obtained by the combination of carbarsone, 0.25 Gm. twice daily for ten days orally, and yatren, either 0.25 Gm. three times daily by mouth or 5 Gm. by retention enema. In patients having liver or lung abscesses emetine is the drug of choice. In this series, 12 patients had one of these two complications. It is interesting to note that amebic hepatitis or liver abscess may develop in the absence of diarrhea. While the immediate effect of treatment is gratifying, relapses are common; 36 per cent of the patients whom we have followed had one or

more relapses. These responded promptly to further treatment.

Mortality

Seven patients (7 per cent) in this series died. In 2 of these cases the diagnosis was made at autopsy only, and another patient was moribund on admission. The last 40 patients seen here during the past three years have all recovered, even though 4 of them had liver or lung involvement.

Discussion

In this section of the country, amebic dysentery is one of the more important diseases which results in ulceration of the colon. With the exception of chronic idiopathic ulcerative colitis, it is the most frequently encountered disease which causes a bloody diarrhea in adults. For every patient having an active diarrhea from amebic infection, it is reasonable to assume that there are many who are cyst carriers. Just why all cyst carriers do not develop the active disease is a matter yet to be determined. The virulence of the organism, the degree of infection, and the resistance of the host are all factors to be considered. In this series, it was noted that all patients who had relapses had been subsisting upon a deficient diet, although rarely were there any objective signs of a deficiency state. It is possible that the high percentage of relapses noted was due to dietary deficiency in the host, although they may have been due to re-infection. However, in no case could a history be obtained of a similar diarrhea among other members of the family. It is wise therefore in treating these patients not only to attack their amebic infection but also to correct any co-existing dietary deficiency.

Summary

In conclusion, it should be emphasized that amebic dysentery is prevalent in North Carolina; that it can be diagnosed easily, provided proctoscopic examination is employed; that its response to proper treatment is gratifying; that relapses are frequent; that the patient should have repeated courses of treatment after the original attack has subsided; and that it is important to correct any co-existing dietary deficiency.

LABOR AND LAUGHTER

Of a State Board of Medical Examiners

BENJAMIN K. HAYS, M. D.

OXFORD

Since the death of Dr. John C. Rodman, of Washington, N. C., which occurred about one year ago, I have been the only living member of the State Board of Medical Examiners of 1908-1914. There is no happier niche in my memory than that which calls to mind six years of association with six delightful men.

Each of these men devoted his life to the relief of human suffering, and each of them left the world a better place because he had lived in it. There was the able and aggressive Dr. L. B. McBrayer, at that time of Asheville, who was later President of the State Medical Society, and who acquired a well-earned reputation as leader in North Carolina's fight against tuberculosis. There were the sweet spirited and lovable Drs. J. L. Nicholson of Richlands and John C. Rodman of Washington; the keen wit, Dr. H. H. Dodson of Greensboro; the man of energy and action, Dr. John Bynum of Winston-Salem; and the genial Dr. W. W. McKenzie, of Salisbury, who told the boys risque stories, and made a friend of every man of them.

Dr. McKenzie had an enviable gift which I have never been able to understand. He seemed to get through his work without effort or worry, and to grade his papers in such a short time that at first I thought it impossible that he could have given them due consideration. Yet his grading, more nearly than that of any other member of the Board, corresponded to the applicant's average.

I was Secretary of the Board throughout the entire period, and this work led me to make some interesting observations. It was a period of transition in medical education. The national grading of medical schools had not been made at that time. There were still schools that required no preliminary education, and but two years to complete the medical course. In states where such schools existed medical examining boards were compelled to keep their standards low. This condition brought about the problems involved in rules for reciprocity. We were unwilling to grant reciprocity to states whose stand-

ards were lower than ours, while other states, whose standards were higher, refused to grant reciprocity to us. The "Five Years of Successful Practice" clause was the child of the present writer's brain. It was adopted by our Board, and later by other states. These various problems were discussed at length in the *Journal of the American Medical Association*¹⁾ and received favorable editorial comment.

There appeared before our Board just about one hundred applicants each year. These might be divided into groups of twenty-five each. The lowest group was composed of men who were densely ignorant, and if any one of them passed it was by the narrowest margin. The second group was composed of men who were in the doubtful class; yet almost all of them made the required grade. The third group was made up of well informed men who passed without difficulty, although none of them were brilliant. The fourth group consisted of well educated men, graduates of the nation's leading medical schools, who passed the Board examination with flying colors. Of these not less than ten were definitely brilliant. Finally, and of greatest interest to me, there was always one man—sometimes two, or possibly three—who possessed what might be called an encyclopedic mind. It was impossible to ask such men a legitimate medical question that they could not answer.

In the oral examinations of such candidates, an examiner might switch to the exotic, a procedure which he not infrequently regretted; for these young brilliants would sometimes lead him into waters beyond his depth. One of these men was the late Dr. J. L. Adams of Asheville, who outfigured his examiner on a chemical equation. Another was Dr. James W. Davis of Statesville, who by an oversight omitted an entire question, and with ten points against him on one paper came out far in the lead of the class for that year; and still another was Dr. Hubert B. Haywood, who so nearly overtopped the all-time record of the state.

The all-time record was made, and still stands unless broken in recent years, by Dr. Hubert A. Royster of Raleigh. Nearly fifty years have passed since Royster and I sat side by side and scribbled our answers. I shall never forget the flush that came over

1. Hays, Benjamin K.: Aims, Purposes, and Problems of the State Board of Medical Examiners, J. A. M. A. 58 107 (January 18) 1912.

the face of one of the examiners who had, as I believed, prepared a certain catch question with which to trip the unwary. Somehow the examiner in asking the question had gotten himself twisted, and before he could recover Royster put the question in correct form, and then proceeded to answer it.

Two other like instances I call to mind. When the late Dr. Richard H. Whitehead, having acquired a national reputation as a teacher of anatomy at the University of North Carolina, was called to the chair of anatomy at the University of Virginia, it so happened that I too wanted medical license in Virginia. This was before the days of reciprocity. Both Dr. Whitehead and I were granted an oral examination, and appeared before the Virginia Board together. Dr. Whitehead's examination, or his answers, consisted in a twenty-minute discussion on recent advances in the knowledge of anatomy. I think some of the members of the Virginia Board had a vague idea of what he was talking about.

The second instance was that of the late Dr. Clarence A. Shore. He was a graduate of Johns Hopkins, and had spent two years in practical laboratory work. He was called to North Carolina to organize and take charge of the State Laboratory of Hygiene. When he appeared before our Board he was not, according to our rules, entitled to reciprocity, but was granted an oral examination. I was appointed to examine him. I asked him three questions: First, why was he selected to do this work? Second, what was it that he was going to do? Third, what benefit would the state derive from his work? To the first he replied that he did not know, and as to the other two, he was quite uncertain. I graded him perfect and dismissed him.

No man acquainted with the great work done by Dr. Shore in this state can question that my estimate of his knowledge and ability was justified.

In grading the written papers, the examiner was put to much unnecessary labor by being compelled to decipher pages of uncertain handwriting when a question should have been answered in a few lines. To avoid this I prepared an examination in which most of the questions could be answered in one word. On a printed sheet of questions blank spaces were left for the answers. After the examination was over blotters

were found scattered about the room with many of these answers written upon them.

A saving sense of humor does much to relieve the tedium involved in the arduous labors and frightful responsibilities resting upon every member of a Board of Medical Examiners. This humor, more often than otherwise, is derived from the answers given by the half-baked group of applicants. For example, the late Dr. George W. Long of Graham told me this one: He had asked an applicant the difference between diarrhea and dysentery. The applicant hummed and hawed, scratched his head, walked the floor, and then came out with this Delphic reply: "One is where you try to do it and can't, and the other is where you try not and can't help it."

In one oral examination, when I had asked for the signs and symptoms of advanced parenchymatous nephritis, the applicant made a few random remarks, and hurried on to laboratory findings. "But," said I, "before you come to that, even as the patient enters your office, and before he has taken his seat, what do you notice?" The applicant crossed his legs and slapped his hand upon his ankle. "That is right," said I. "You have answered correctly without saying a word." But the applicant began a meaningless discourse with no thought of swollen ankles or unlaced shoes.

One of my questions requiring a one word answer was: "What is the significance of colon bacilli in drinking water?" One man wrote, "It means that diseases due to this germ are probably present in the neighborhood." But my favorite question with the half-baked was: "Define the word stercoraceous." The various replies to this were most amusing. One man wrote, "It means coming back by the same way that a thing went in." They all had the word associated in their minds with vomiting, but what the relationship was they had no idea.

On one occasion we had a German appear before us who presented a number of large scrolls from various German institutions of learning. These were passed to the Board members, no one of whom could read a word of German. After a few moments devoted to meaningless study the President said, "Well, gentlemen, what about it?" "I see," said one member of the Board, "that he graduated in the year 1886." "DocTOR," exclaimed the applicant, "dot vos der year in vich I vos born."

COARCTATION OF THE AORTA

THOMAS W. BAKER, M.D., F.A.C.P.

CHARLOTTE

Coarctation, or stenosis of the aorta, is a congenital maldevelopment of the descending aorta. This occurs almost uniformly near the insertion of the ductus arteriosus, which is just distal to the origin of the left subclavian artery. The anomaly may vary from a partial stenosis to the usual complete occlusion of the aorta.

Until recent years the pathologists claimed almost exclusive rights to this diagnosis, but the excellent work of Maude Abbott⁽¹⁾, Bonnet⁽²⁾, Blackford⁽³⁾ and others has served to direct the attention of the clinician to this most interesting of cardiovascular anomalies. Blackford, in a series of over 68,000 consecutive necropsies, found that coarctation of the aorta occurred once in 1500 cases. Prior to 1936, less than 350 cases of this condition were to be found in the literature and less than a fourth of these had been diagnosed clinically. However, a survey of the literature over the past five years reveals the fact that far more cases have been reported since 1936 than in all the preceding years, and practically all of these cases were diagnosed clinically. More than ninety articles concerned with coarctation of the aorta are listed in the *Quarterly Cumulative Index Medicus* during this five-year period. These facts clearly indicate that this anomaly has been frequently unrecognized in the past.

The etiology and pathogenesis of coarctation of the aorta are not clear. There are two principal hypotheses. A number of observers have argued that in cases of coarctation, fibers similar to those composing the wall of the ductus extend into the aortic wall and that with the contraction of the ductus soon after birth these fibers likewise contract and act as a purse-string to produce a stenosis of the aorta. The more recent investigators support the theory that coarcta-

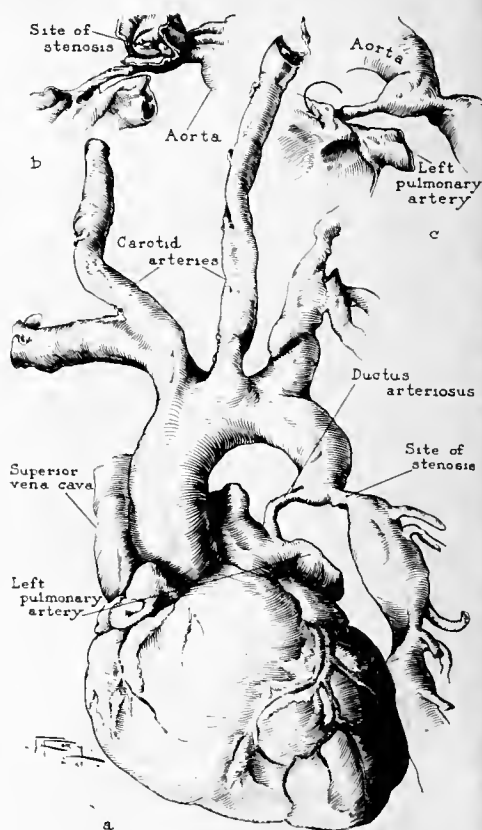


Fig. 1. Gross pathologic changes in a case of coarctation of the aorta (Baker and Shelden⁽⁶⁾).

tion is due to a developmental defect in the primitive aortic system of fetal life.

The gross pathologic changes which are usually typical of coarctation of the aorta are illustrated in figure 1. The branches of the subclavian arteries usually responsible for the collateral circulation are the first five intercostals, which anastomose with the aortic intercostals; the dorsalis scapularis and the internal mammary arteries, which anastomose with the deep epigastric arteries (fig. 2). Other arteries may also assist in collateral circulation.

Coarctation of the aorta is one of the congenital anomalies which lends itself to precise recognition during life. It is not a difficult clinical diagnosis. The diagnosis is not dependent upon laboratory or roentgenographic confirmation, although the latter is frequently helpful. The most important factor in discovering these cases is to keep the

Read before the regional meeting of the American College of Physicians, Chapel Hill, North Carolina, November 1, 1941.

1. Abbott, M. E.: Coarctation of the Aorta of the Adult Type. II. A Statistical Study and Historical Retrospect of 200 Recorded Cases, with Autopsy, of Stenosis or Obliteration of the Descending Arch in Subjects Above the Age of Two Years. *Ann. Heart J.* 3:574, (June) 1928.
2. Bonnet, L. M.: Sur la lésion dite sténose congénitale de l'aorte dans la région de l'isthme. *Rev. de med.* 23:408, 253, 333, 418, 1903.
3. Blackford, L. M.: Coarctation of the Aorta. *Arch. Int. Med.* 11:702 (May) 1928.

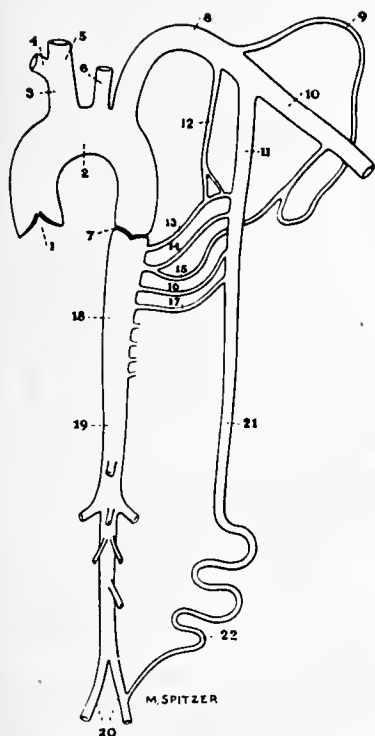


Fig. 2. Schematic drawing of the usual collateral circulation in a case of coarctation of the aorta. (1) Bicuspid valve, (2) aortic arch, (3) innominate, (4) right subclavian, (5) right carotid, (6) left common carotid, (7) coarctation, (8) left subclavian, (9) subscapularis, (10) axillary, (11) internal mammary, (12-17) intercostal arteries connecting with the aortic intercostals, (18) descending aorta, (19) abdominal aorta, (20) iliacs, (21) superior epigastric, (22) inferior epigastric (Gitlow, S., and Sommer, R. I.: Complete Coarctation of the Aorta, *Am. Heart J.* 17:106 (July) 1940).

interesting anomaly in mind as a diagnostic possibility. Symptoms are few; physical signs are definite. It has been frequently noted that the majority of these cases are in robust young adults. The case reports on this subject are replete with such statements as: "This case occurred in a youth of 20 years who had been a star athlete in high school and who had won his letters in basketball and swimming in college." This finding has been attributed by some writers to the increased cerebral circulation which occurs in this condition.

The few symptoms which may occur are flushing of the face, profuse sweating of the upper portion of the body, headaches, tinnitus, and dizziness, all of which may be

attributed to the hypertension in the upper extremities, head and neck. Occasionally, but certainly not as often as we might expect, intermittent claudication may exist in those cases in which the collateral circulation to the legs is insufficient. Symptoms of myocardial failure or those resulting from secondary chronic valvular disease may eventually develop. Because of the paucity of symptoms, the physician is frequently not consulted until a vascular catastrophe has occurred, and the seriousness of the complication makes a thorough examination impractical. Thus the primary diagnosis of coarctation of the aorta is obscured.

The cardinal signs of this anomaly are:

(1) *Hypertension in the upper extremities, with a marked decrease of the blood pressure in the lower extremities.* Frequently the blood pressure in the legs cannot be obtained. This is a reversal of the normal state, as the blood pressure is usually higher in the legs than in the arms.

(2) *An absence of pulsations in the peripheral arteries of the lower extremities.* This is in contrast to the forceful pulsations in the upper extremities. A palpable aortic pulsation in the abdomen is usually absent, and if a feeble pulsation is detected over the femorals, it is asynchronous with the radial pulse. If the pulsations of the dorsalis pedis and posterior tibial arteries are present, coarctation of the aorta can be excluded as a possibility without further ado. This routine palpation of the peripheral arteries has afforded the first clue in the cases which it has been my privilege to observe.

(3) *The presence of a well developed collateral circulation over the thorax.* Large, tortuous, anastomosing arteries usually may be palpated over the interscapular and axillary regions of the chest, and in some cases may be easily seen. These collateral vessels transmit a murmur, which has been the initial diagnostic clue to this condition in several cases.

These three signs—*hypertension in the arms, absence of peripheral pulsations in the legs, and the presence of a well-developed collateral circulation over the chest*—are the cardinal manifestations of coarctation of the aorta. Other signs are frequently observed. Cardiac hypertrophy is present in 75 per cent of these cases. A bicuspid aortic valve is often an associated defect, with an aortic insufficiency resulting. In such cases aortic insufficiency may be incorrectly designated



Fig. 3. Roentgenogram of the chest in a case of coarctation of the aorta. Note the scalloping effect produced by erosion of the inferior margins of the ribs (Lewis, Thomas: Material Relating to Coarctation of the Aorta of the Adult Type, *Heart*, 16:205 (June) 1933).

as the primary diagnosis, if the peripheral arteries are not examined and the collateral circulation over the chest is not discovered. Anomalies of the other great vessels arising from the arch of the aorta are more the rule than the exception in this condition and can sometimes produce bizarre phenomena. In one case which was called to my attention, the constriction of the aorta occurred above the origin of the left subclavian artery, thereby giving rise to a remarkably low blood pressure and an almost total absence of the radial and ulnar artery pulsations in the left arm.

While the diagnosis of coarctation is essentially a clinical one, certain accessory roentgenographic signs are of value when present. They are as follows: (1) a bilateral erosion or scalloping of the inferior borders of the ribs, which is almost always present, (2) an absence of the prominent aortic knob, usually associated with hypertension, and (3) a dimpling of the descending aorta which is best seen in the left oblique position (fig. 3). It is not difficult to appreciate the fact that ribs may be readily eroded by the large, tortuous, pulsating intercostal arteries, such as those observed in figure 4.



Fig. 4. Sternal plate from a case of coarctation of the aorta. Note the extreme tortuosity and dilatation of the intercostal arteries, which have produced erosion of the ribs (Love, W. S., and Holms, J. H.: Coarctation of the Aorta With Associated Stenosis of the Right Subclavian Artery, *Am. Heart J.* 17:630 (May) 1939).

The frequency with which cardiovascular anomalies such as the bicuspid aortic valve, anomalous origin of the arteries from the aortic arch, and congenital cerebral aneurysm are associated with coarctation would appear to be a significant part of the picture. Of these associated anomalies, the small congenital cerebral aneurysm is a source of such potential danger that a further word is necessary. The term aneurysm seems to be a misnomer, for these pea-size dilations which occur at the bifurcations of the cerebral arteries are so small that they are frequently overlooked. They are not dependent upon infection or syphilis. Forbus⁽¹⁾ and others in studying these cerebral aneurysms have found a congenital absence of the media of the arterial wall at the bifurcation of the

1. Forbus, W. D.: On the Origin of Miliary Aneurysms of the Superficial Cerebral Arteries, *Bull. Johns Hopkins Hosp.* 47:239 (November) 1930.

cerebral vessels from the circle of Willis, where the great majority of these out-pouchings are to be found. Forbus also demonstrated that a greater pressure is exerted on the arterial wall at the angle of bifurcation than elsewhere. It is, therefore, not surprising that in cases of coarctation of the aorta in which there has necessarily been a sustained hypertension in the cerebral vessels since birth, we should frequently find these congenital aneurysms and that so-called "spontaneous" cerebral hemorrhage is the cause of death in many of these cases. However, it should be stated that most ruptures of cerebral aneurysms occur independently of coarctation. It is now generally agreed that rupture of a congenital aneurysm is considered the most likely cause of so-called "spontaneous" hemorrhage in a young person.

Parker⁽⁵⁾ in 1926 first called attention to the phenomenon of "intermittent leakage" as a diagnostic sign of a small rupture of the aneurysmal sac, in which the small slit-like aperture closes after a certain amount of bleeding. These recurrent "leakages" are characteristic of a large percentage of cases of intracranial aneurysm, and make it possible to suspect this condition during life.

I should like to review briefly a case of coarctation of the aorta associated with a presumed intermittent leakage of a congenital aneurysm which I have previously reported in detail in the *American Journal of Medical Sciences*⁽⁶⁾.

Case Report

A married woman, aged 25, was first seen in April, 1935, at which time she was complaining of a recent diplopia and hypertension. Prior to July, 1934, she had always enjoyed excellent health and had indulged strenuously in tennis, basketball and swimming. There was no history of rheumatic fever or syphilis, and she knew of no other cases of hypertension in the family.

In July, 1934, after swimming for almost two hours, she experienced what she described as a "sudden bursting sensation in the head", which was followed immediately by a violent headache over the right temporal region, blurred vision, and vertigo. She did not lose consciousness but states that

she would have drowned if the occupants of the accompanying boat had not seen her plight and pulled her from the water. She consulted her physician a few days later, at which time her systolic blood pressure was found to be 185 mm. of mercury. This was the first knowledge of her hypertension.

Nine months later she experienced a syncope of five minutes' duration which had been preceded by a sudden loud noise in the head and a severe pulsating headache. Five days later she suddenly lost all vision in the right eye, and diplopia, dilatation of the right pupil, and a slight ptosis of the right lid were noticed shortly after this episode. I first saw the patient four days after this attack.

Physical examination revealed a young woman who was well developed and of an athletic build, and who weighed 136 pounds. The physical examination was essentially negative except for the features which I shall mention. The heart was only slightly enlarged, but auscultation revealed a well-defined double murmur over the aortic valve. The radial pulse in each arm was forceful, relapsing, and of the Corrigan type. The systolic blood pressure in the right arm was 182 mm. of mercury and the diastolic was 82 mm., suggesting the high pulse pressure of aortic insufficiency. In attempting to elicit the "pistol-shot" sound of Duroziez over the femoral arteries, I found to my surprise that there were no pulsations over either femoral artery. This was substantiated by totally absent pulsations of the posterior tibials, dorsalis pedis and popliteal arteries in both legs. Because of an adequate collateral circulation there was no pallor of the lower extremities with elevation, or rubor with dependency.

The blood pressure was taken with the patient in the recumbent position, and the readings were as follows: in the right brachial artery 182 systolic, 82 diastolic, with essentially the same reading in the left arm; in the right popliteal artery 118 systolic, and in the left popliteal 128 systolic. The diastolic pressure could not be determined in either leg. The sounds were heard with difficulty over the popliteal vessels, and the oscillations of the manometer were barely perceptible.

There were no visible pulsating vessels over the thorax, but there were several large, pulsating vessels which could be easily pal-

5. Parker, H. L.: Aneurysms of Cerebral Vessels; Clinical Manifestations and Pathology, *Arch. Neurol. and Psychiat.* 16:728 (December) 1926.

6. Baker, Thos. W., and Shelden, Walter D.: Coarctation of the Aorta with Intermittent Leakage of a Congenital Cerebral Aneurysm, *Am. J. M. Sci.* 191:820 (May) 1936.

pated in the interscapular regions of both sides. A murmur could be heard over all the upper intercostal arteries.

The neurological examination revealed a ptosis of the right upper lid, a paralysis of the internal rectus muscle of the right eye, a loss of convergence, and a dilatation of this pupil, indicating a partial paralysis of the oculomotor nerve on the right side. Vision had returned to normal, visual fields were full, and the ocular fundi showed only slight hypertensive diminution in the calibre of the arteries. The neurological examination was otherwise normal. The Kline and Kahn reactions of the blood were negative, and all other laboratory tests gave normal results. A roentgenogram of the thorax revealed a bilateral erosion of the inferior surfaces of the fourth, fifth, sixth, seventh and eighth ribs posteriorly.

The patient returned home with the advice to discontinue athletics and to avoid strenuous physical activities in the hope of preventing a vascular catastrophe.

Maude Abbott⁽¹⁾ has shown that death was the result of coarctation or one of its complications in 77 per cent of her reported cases. These complications include rupture of the aorta or heart in 20 per cent, cardiac insufficiency in 30 per cent, cerebral hemorrhage in 12 per cent, mycotic endarteritis and bacterial endocarditis in 7 per cent, and cardiac asystole without apparent cause in 8 per cent. She found the average span of life to be approximately 35 years. However, one patient is recorded as living to the ripe age of 91 years.

Conclusion

Let me emphasize the fact that coarctation of the aorta is not the extremely rare entity which it was once thought to be. Coarctation should be given due consideration in every case of so-called essential hypertension and in every young person who suffers from an unexplained cerebral hemorrhage or who presents signs of cardiac insufficiency, particularly from aortic valvular disease. Only a few seconds will be required to determine the presence of arterial pulsations in the feet and thereby exclude coarctation as a possibility. It is the duty of the physician to recognize coarctation without symptoms, whenever possible, before the advent of cardiac failure or before a vascular catastrophe has occurred. If this anomaly is recognized in early life, much can be done to

avert disaster by curtailing physical activities and prohibiting athletics, in which, strangely enough, most of these patients strenuously indulge. The possibility of detecting this anomaly should cause the physician who makes routine examinations of large numbers of young persons to bear it ever in mind.

MEASLES

The Wake County Epidemic of 1941

CHARLES F. WILLIAMS, M. D.

RALEIGH

The epidemic of measles which came to Wake County this year is probably not a great deal different from some of the severe ones in different parts of the country at other times. It is interesting to note the spread of this disease from one focus to another and to another.

The cycle of measles in Wake County has run from two to four years. In the statistics of the Wake County Health Department, it is shown that in one epidemic there would be a large number of cases in the city of Raleigh and a small number in the surrounding county; then, during the next epidemic, the positions would be reversed. However, in one epidemic the number of cases in the city and county were practically the same.

In 1932, there were 961 cases in the whole of Wake County. In 1934, there were 615, and the same number were reported in 1936. In 1938, we had probably the greatest epidemic in the history of the county, there being 2250 reported cases and probably a great many that were not reported. The great majority of the cases occurred in the county, with but a small percentage in the city. The following year, 93 cases were reported, and in 1940, only 9 cases were reported in the whole of Wake County.

Through April 22 of this year, there were 1345 cases in the Raleigh city limits alone, and 595 in the rest of Wake County—a total of 1940. This division, you will notice, is the reverse of the 1938 epidemic. The epidemic started in a community about three miles southwest of Raleigh, where approximately 52 cases were reported in January, as compared with 3 in the city of Raleigh. In February, 127 cases were reported in Wake County against 136 cases in Raleigh.

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In March, 300 cases were reported in the county and 944 in the city. Up through April 22, 115 had been reported in the county for that month and 262 in the city. The peak of the epidemic was reached in the last week of March, with 340 cases being reported in the city alone. Up through the present writing, we are very happy to report that no deaths have occurred. There was one known case of measles encephalitis.

After the beginning of the epidemic in the area southwest of Raleigh, the trail of this disease could be followed to one of the county schools lying outside the western boundary of the city. It could then be followed to the Sunday schools in the western section of the city and to one of the public schools in the western edge of the city. From there, it could be traced to other Sunday schools in the center of the city and then to the public schools located in that area. The epidemic seemed to cross the city slowly from west to east. In some of the schools, it was reported that approximately 65 per cent of the pupils in certain grades were absent.

In Wake County the children are allowed to attend school until the ninth day following exposure to a known case of measles. The health authorities assume that the first signs and symptoms of the disease will occur by the twelfth to fourteenth day. It appears that if these children were eliminated from school at the time of exposure there would be less danger of their exposing other children. It also appears that it is useless to keep schools open when approximately 65 per cent of the pupils are absent; for those who do attend will have to be held back when the others return. If an epidemic reaches such a proportion that the schools have to be closed, Sunday schools, picture shows, and other gatherings of children should be forbidden. Of course, the argument will arise that a child should "go ahead and have the measles anyway." This argument should be considered with a view to the general condition, age, and past history of the child.

The virulence of epidemics of measles seems to vary. In some epidemics the disease does not appear to give the child a great deal of discomfort, and there are but few complications. The Wake County epidemic of 1941 appears to have swung to the other extreme; there were many cases

of pneumonia, otitis media, severe vomiting, and nose bleeds reported. The children appeared to be sicker, with higher fevers, during this epidemic than during the past two or three years. The severity of the cases this year may be due to the large number of cases of pneumonia and influenza that occurred during January and February.

There is no need to discuss the signs, symptoms, and the course of the disease before this audience. All of these are well known to my listeners; so it may be fitting to move on to some of the controversial subjects that have been praised on one hand and damned on the other. Probably the most discussed of these, at the present time, is immune globulin. This product may be obtained commercially from several pharmaceutical houses. It is a known fact that immune substances such as diphtheria antitoxin, antipoliomyelitis protective substances, and anti-measles protective substances are transferred from the mother's blood to that of the offspring. With this fact as a basis, McKhann and Chu began extracting the blood from placentas for the measles protective substances. These substances have been found in the globulin fraction of the saline extract. It is the concentrated globulin fraction which is used for prevention and modification of measles. The question now rises as to which cases should be modified, which prevented, and which allowed to take the disease unaltered.

In the first class (for modification of the disease) I have children under 6 years of age, who are apparently in good health. In the next classification (for an attempt at prevention) I would put children of poor general condition. In the third class, I have those children over 6 years of age, who are in good health. These ages are arbitrary, and I gave myself leeway on both sides.

I had 24 children inoculated, and 1 child inoculated twice at the request of the parents. The dosage varied according to the age and condition of the child. Again I have placed an arbitrary age limit, which I did not always follow. To children under 3 years of age, I gave 2 cc. of immune globulin, and to those 3 years and over, I gave 4 cc. The results from these inoculations, I consider, are very good. This group of children were compared with 50 other children who were not given the inoculations.

In the group which were given inocula-

tions, 16 or 67 per cent had light cases, which consisted of fever not over 103 F. and mild constitutional symptoms. Four or 16½ per cent had poor results, and of these 2 children had unmodified cases. One child had a moderately severe attack with complications of otitis media, and one had a moderately severe case with prostration and nose bleeds. In the remaining 4 or 16½ per cent, the children did not develop the disease.

In one family of 4 children, the 12 year old boy brought the disease home from school. The 9 year old girl was not inoculated. The 5 year old boy and the 18 month old girl were inoculated with 4 cc. and 2 cc. of immune globulin, respectively. The oldest boy, who brought the disease home, had a moderately severe case, with much vomiting, prostration, severe rash, moderately severe cough, and a temperature of 105 F. at intervals. The 9 year old girl had a case almost as bad as the boy's, with bad rash, temperature ranging slightly over 104 for two days, nose bleeds averaging twice daily for three days, and a fair degree of prostration. The 5 year old boy, who had been inoculated, had a mild type of measles with scanty rash, fever not over 103 F., and no other symptoms except a mild cough. It was difficult to keep this child in bed. The 18 month old girl had a prodromal period of mild fever and irritability for six days. Following this, she broke out with a rash and Koplik's spots, which lasted about two days and disappeared. This was deemed a very mild type of measles. Similar instances were noted in other families.

Of the 50 cases which did not have inoculations, 2 or 4 per cent had severe measles, both being complicated by pneumonia with fever of 105 F. for two days and great prostration. One of these children also had whooping cough. Three or 6 per cent had moderately severe measles with high fevers, marked prostration, moderately severe cough, marked rash, but no complications. Forty-two or 86 per cent had moderate measles symptoms with fever of 104 F. for two to three days, moderate cough, moderate prostration, and a rash covering thickly the entire body. Three or 6 per cent had light cases.

As for the complications in the two groups, there was 1 case of otitis media in a child who had been inoculated about one month previously for another exposure to measles.

(The mother could not trace the exposure which caused the disease.) There were 3 cases of otitis media in those not having inoculations. There were 2 cases of pneumonia, both in children not inoculated. There were nose bleeds averaging two a day in 4 children, 1 with the inoculation and 3 without. In one child not inoculated, there was an acute flare-up of nephritis, which had quieted down about a month previously. Some of the other accompanying diseases were whooping cough in 3 children and chicken pox in 2.

Aside from the cases of pneumonia from measles treated in the home, there were 10 cases seen in Rex Hospital on the service. These children had, at some time previous to admission, or during their stay in the hospital, been treated with sulfathiazole. We found that 3 or 30 per cent did not respond to this therapy and that 7 or 70 per cent did. Those children not responding to the sulfathiazole were given blood transfusions and supportive fluids, and after the second transfusion the temperature came to normal and stayed there. The throat cultures of these children were predominantly non-hemolytic streptococci. A few cases showed pneumococci which were not typed.

During this epidemic, I did not use convalescent serum, convalescent whole blood, adult blood, or pooled blood. These, as you know, are not readily available and the dosage is very large in comparison with the immune globulin. Possibly someone here has used the two and can compare them for us.

The question has arisen several times whether to give to a child with measles sulfathiazole in doses a fourth or a third of the regular dose if that child has a history of repeated ear infections or bronchitis. Dr. Alexis Hartmann of St. Louis suggested giving sulfathiazole prophylactically in such cases in doses one-fourth the regular size. I tried this on 3 children who had histories of otitis media and bronchitis. None of these children developed any complications during the disease, and all had moderate cases. Of course, 3 cases are of no importance as a report but they may give food for thought.

Summary

The Wake County measles epidemic of 1941 could be classed as one of the larger epidemics and with measles of a more severe type than is usually seen. It was interesting to note the spread from a nest in the out

skirts of the city to the involvement of the whole city. I believe that the use of immune globulin (human) for modification, and, if necessary, for prevention of measles will become more widespread in future epidemics. I also think that sulfathiazole, for the prevention of complications in children with histories of repeated attacks of otitis media and bronchitis, should be given a trial.

Some children had no reaction at all to the immune globulin except a sore buttock. Some had fever of 104 F. for about six hours. Most of the children had a little fever and a little discomfort, but there were no serious results from any of these inoculations.

Abstract of Discussion

Dr. A. S. Root (Raleigh): I should like to substantiate Dr. Williams' idea about the effectiveness of immune globulin now on the market. During the last epidemic four years ago I was very much disappointed with the effects of immune globulin. We had so many failures that we discontinued its use and trusted to convalescent blood. During this year's epidemic we used the immune human globulin again.

The immune human globulin put out four years ago was too refined. The present immune globulin is not so refined and is much more effective. We confined our injections of immune globulin to children under 3 years of age, except for children with asthma or some similar condition.

We gave about 75 doses of immune globulin to children intimately exposed to measles within the first six days after exposure. Eighty per cent of those doses were effective. Nine per cent of the children were completely protected and the 71 per cent remaining had very mild cases of measles. We did not have to use the convalescent blood at all in this epidemic.

My general impression is that immune globulin is not quite as effective as convalescent blood, but it is easy to get. There is very little difference.

Chairman Roberts: Did you find that any particular brand of immune globulin gave you any more reaction than other brands?

Dr. A. S. Root: No, sir.

Dr. L. J. Butler (Winston-Salem): How do you estimate the dosage of immune globulin? We had an epidemic two years ago in Winston-Salem and used immune globulin then. To children under 2 years of age I gave 2 cc. Of two children who had the same exposure, one child had a mild case of measles and the other child did not have any. Do you have any real data on how to estimate doses for these children? We want the child to have a mild case of measles. Often we prevent the disease in one child with the same dosage which gives a mild case to another child.

Question: Do you have any delayed incubation period?

Dr. J. B. Sidbury (Wilmington): We are just starting our epidemic in Wilmington. My previous experience with immune globulin was as Dr. Root said. The children got a temperature of about 104 F. I gave about 100 injections of immune globulin. I had about 10 to 12 per cent failures as compared to 2 to 4 per cent with serum or whole blood. Mothers complained more about immune

globulin than about the whole blood. I usually use whole blood from either parent who has had the disease. I give it five or six days after exposure.

What we would like to do is give these children a modified case. If we delay the injection or give a smaller amount of serum, it seems to work better. You can get the serum from Philadelphia. It costs about 20 cents per cubic centimeter, which is about the same as the cost of immune globulin. I have more confidence in the serum. I have not used the immune globulin for two years now, and I do not know what this latest product will do.

Dr. A. S. Root: With this newer preparation these children do not get the constitutional reactions and the little sores on the buttocks which they have when you inject blood.

Dr. J. B. Sidbury: The other preparation caused them. I talked to the father of one of Dr. Williams' patients and he said his child got a terrific reaction. This dry serum you get from Philadelphia is put up in very convenient form. The immune globulin used to cost \$2.25. I think you can get the convalescent serum from the Children's Hospital in Philadelphia for about the same price or a little less.

Dr. John A. Shaw (Fayetteville): We had an extensive epidemic in Fayetteville. I used quite a bit of immune globulin. In some children it prevented a case. Two cases had acute nephritis. I gave 4 cc. to a 4 year old child and he did not have measles. I think that when we want to prevent a case, if we give it the day after exposure it will probably prevent it. In cases where you want to stop it entirely, it works just as well as it does to alleviate a case.

Dr. Charles Gay (Charlotte): I was interested in the prophylactic Dr. Williams mentioned. I have seen children develop a definite pneumonia within twenty-four to forty-eight hours after measles broke out. I have also seen otitis media develop. I used sulfathiazole in that case with very good results.

Dr. —: We lose more children from measles in North Carolina each year than we do from diphtheria. My experience has been like Dr. Sidbury's. I get better results from whole blood. The fact that it is not costly is sometimes an important item. I give anywhere from 10 to 50 cc. Two sisters came in the office after having been exposed to measles. One was a known asthmatic. I gave them both the usual dose of immune globulin. Before they got home, both had hard chills, became cyanotic and ran temperatures around 104 and 105 F. I never had that reaction from whole blood.

Dr. M. Y. Smith (Greensboro): I think we will all admit that the immune globulin we get now is better than it was formerly. I still feel that the effect from convalescent blood is dramatic, but we can not always get it. I was very much interested in Dr. Williams' discussion of chemotherapy. The tendency when any child develops a temperature seems to be to saturate it with sulfathiazole, whether it has measles, cold or cough. I think most of us will agree that chemotherapy has nothing at all to do with the severity or prevention of measles. It has some effect as a prophylactic against complications. Dr. Williams brought that point out, and it should be stressed further. Sulfathiazole is not given to modify measles but to modify some of the complications that develop.

Dr. Jean McAllister (Greensboro): Were there any cases under 6 months of age in that group?

Dr. Williams: I did not see any children with measles under 6 months of age.

In regard to Dr. Butler's question; we did not

have any definite thing on which to estimate the dosage. We just had to wait and see what would happen.

In regard to the question about the late incubation periods, I did not see any. Several of the prodromal periods increased from three to five and six days.

SOME IMPRESSIONS GAINED FROM TWO HUNDRED AND FIFTY CHOLECYSTECTOMIES

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The collection of a group of case histories has become one of our most reliable and common methods of obtaining statistical data. Upon conclusions drawn from such data are based the greater portion of our therapeutic procedures. However, many such studies have been inconclusive and often misleading. To compile the results of a series of case studies without an accurate and carefully considered knowledge of the factors which have influenced those results may be not only valueless but harmful. Therefore, the sole purpose of this paper is to present some impressions that have come from a series of 250 cholecystectomies. I feel that the lessons learned have served to lower mortality and morbidity in a private practice.

Type of Material Included

This series includes all cholecystectomies performed by the writer between the years 1920 and 1940. It does not include any case of gallbladder disease for which cholecystectomy was not done. Cases which did not come to operation, or for which some other type of operation—such as cholecystotomy or cholecystenterostomy—was done, or in which the gallbladder was only explored are excluded.

All cases in this series were worked up by the writer and were followed from the history through the physical and x-ray examination, operation, and convalescence; and about 20 per cent were observed for a year after operation. All preoperative impressions found to be wrong at operation were carefully noted and recorded. This made fewer corrections necessary in succeeding cases. Through this method diagnostic accuracy steadily improved, in spite of the fact

that many principles I had been taught during earlier training were contradicted. An example of this was Courvoisier's law. There were fourteen cases of palpable mass and jaundice which were not due to cancer, but to stones in the common duct with a distended gallbladder.

The series will be more significant if one considers the fact that the operations were performed during a period when the general surgical trend was undergoing a definite change. When I was fresh from surgical training, it was considered best to drain the acutely inflamed gallbladder after the fulminating symptoms had subsided. In fact, in my early years I performed many operations to remove stones from a gallbladder, drain it, and leave it *in situ*. No such operations have been done in this series during the past decade. The mortality and morbidity have been lowered appreciably since this procedure was discontinued.

Mortality

In the entire 250 cases there were 14 deaths—a mortality of 5.6 per cent. Thirteen of the deaths occurred in the first 175 cases, while only one death occurred in the last 75 cases. This was in a white female, aged 68, who had had recurrent attacks of gallstone colic during the past twenty-five years. Her condition was poor. At operation it was found that the gallbladder had become adherent to the duodenum and that a large gallstone had eroded through the gallbladder wall and into the adjacent adherent duodenum. The stone, the size of a nutmeg, was just about ready to pass into the duodenum and leave a well formed cholecystenterostomy. It certainly appears that nature would have accomplished a complete cure had not man intervened. The gallbladder, with several remaining stones, was removed, and the opening in the duodenum was closed with three rows of sutures. The patient stood the operation well and progressed nicely until the seventh day, when the duodenal defect broke down and formed a duodenal fistula which persisted until death, seven weeks later.

Etiology

The late Dr. J. B. Deaver stated that all gallbladder disease came from appendicitis. While this series of cases does not throw great light on etiology, there are some find-

ings that are significant. In support of Dr. Deaver's statement it is interesting to note that only 5 patients had had appendectomies previously, while 128 appendectomies were done at the time of cholecystectomy. There was a preponderance of females in this series, most of them fat and middle-aged, although some were thin. The youngest patient was 4 years of age, and showed gallstones and empyema. The oldest was 72, and also showed stones. Many patients gave a history of having had typhoid, but the incidence of this has shown a striking decline in those cases operated upon in the last ten years.

Pathology

This study has demonstrated four types of pathology:

1. Acute cholecystitis with or without stones.
 - a. Simple
 - b. With phlegmasia
 - c. With empyema.
2. Chronic interstitial cholecystitis with or without stones.
3. Chronic catarrhal cholecystitis without stones.
4. Cholelithiasis without disease of the gallbladder.

The first type is a catarrhal inflammation of the mucous membrane which is part of a generalized cholangitis. In these cases the general inflammation may subside and leave a diseased gallbladder which may cause phlegmasia, or empyema, or both. The inciting factor may have been a stone blocking a common duct or an acute blood-borne infection. The impaired physiology in this group is due to the toxinemia of infection and to obstruction. This obstruction is of two types. One is that which causes absorption of bile. Bile may be absorbed through the blood vessels adjacent to the duct system when the common or hepatic duct is obstructed, or a process that is not common and not usually recognized—an inflammatory scarring in the cystic duct which causes a valve-like action. Bile can enter the gallbladder but cannot escape by way of the cystic duct. When the absorption capacity of the gallbladder is reached, bile enters the circulation by way of the lymph. This is the only means by which a cystic duct obstruction can produce jaundice. A two-way obstruction of the cystic duct never produces

jaundice. In the former condition x-ray studies show that dye is retained for many hours. When these cases come to operation, the gallbladders are found to be distended with bile, and they cannot be emptied, either *in situ* or after removal. This type of gallbladder has been shown to admit fluid when a cannula is inserted into the duct. Some of the patients in this series had their gallbladders removed when no other gross pathological lesion was present, and all symptoms abated. This process describes the physiological impairment of the third pathological class—namely, chronic catarrhal cholecystitis with or without stones. In this type stones never leave the gallbladder to cause a gallstone colic.

The second type—chronic interstitial cholecystitis without stones—produces symptoms in two ways: (1) by the intermittent pressure of stones in the common duct with resultant obstruction, and (2) by adhesions around the gallbladder and the cystic and common ducts. These adhesions interfere with the contractility of the gallbladder and the motility of the viscera adherent to them. Colonic adhesions produce constipation. Stomach and duodenal adhesions cause spasm and retarded peristaltic flow. Both of these processes produce flatulence.

The fourth pathological type—cholelithiasis without disease of the gallbladder or ducts—is illustrated by the following case. An 8 year old white girl was admitted to the hospital with severe pain in the upper right quadrant and all the symptoms of an acute abdominal catastrophe. A diagnosis of acute appendicitis was made, and the abdomen was opened immediately. The appendix was found to be normal, as were all other organs except the gallbladder, which was filled with pea sized stones. Otherwise, it was normal. No stone could be found in the common duct. The gallbladder was removed and the patient made an uneventful recovery. The gallbladder showed no gross nor microscopic pathology. The bile was sterile and macerated gallstone culture showed no growth. The cause of these gallstones and the resultant colic was not even guessed at until, a year later, Sir Birkley Monyan in a personal interview described a very definite pathological entity characterized by sterile bile and gallstones. He has found a hereditary type of increased red cell fragility in which the red cell products are sent

from the spleen to the liver in such great quantities that the bile becomes supersaturated with bile salts, which are precipitated out in the gallbladder as stones.

Symptoms and Diagnosis

The symptoms of gallbladder disease are numerous and varied, and in this series there were few that were constant and impressive. It is interesting to note that in 12 cases of this series the only significant complaint, and in 3 the only complaint was headache. The other important symptoms varied according to the pathology. In the first pathological group—namely, acute cholecystitis—there were all the cardinal signs of inflammation plus pain and tenderness and muscle spasm in the right upper quadrant. A most constant complaint in this group was of difficult and painful inspiration. Without exception this pain was intensified when pressure was made under the costal border. During the earlier part of this series these patients were packed in ice, and upon subsidence of acute symptoms many showed jaundice. Some cases, however, did not subside, but went on to rupture. In the later cases of the series none were allowed to subside.

In chronic gallbladder disease the symptoms for which the patients sought medical relief were of two types. In one group there were intermittent attacks of gallstone colic. Even in the presence of cholecystitis with adhesions these patients were practically symptom free between attacks. These attacks were, of course, usually associated with the passage of stones. The other symptom which was constant for a type was "gas." These patients have belching and a pressure distress in the epigastrium coming on immediately after taking food. The distress is exaggerated by fat or fried foods. In contradistinction to the pain of ulcer, these patients always feel better when their stomach is empty or partly empty than when it is full. The distress is not an acute, stabbing pain, but a distressing colicky fullness. Many patients have these symptoms over a period of years without ever having acute gallstone colic or any other striking symptom.

With well developed symptoms as described above, one is justified in making a tentative diagnosis of gallbladder disease. In many instances there will not be found

more pathognomonic evidence. The blood count and other laboratory procedures are probably less helpful than in most other abdominal diseases. The x-ray was most constantly of diagnostic aid, but in a definite percentage it was of little or no help. Cholecystography when it gave positive findings was highly reliable. However, in some cases cholecystography showed normal function, and at operation dense adhesions were found. This latter type will usually show a deformed duodenal cap with the opaque meal. An x-ray examination of the gallbladder is, therefore, considered incomplete when cholecystography is negative. In such cases a gastric series should be done. When the case is elective, a therapeutic test which has been of inestimable value is to give an alkali with a strong sulfate salt three times a day before meals for a week. If the symptoms are not markedly relieved, a further study for other disease is deemed necessary.

Prognosis

The immediate operative morbidity has been considerably reduced in the last decade of work. However, it has been unusual for the patient to be symptom free immediately following operation. There are two types of postoperative symptoms. One is due to the patient's becoming accustomed to doing without a gallbladder. When the function of the gallbladder has been lost for some time before operation this type of symptom is not prominent.

The other type of postoperative morbidity is due to the damage that has been done to the liver, especially to the duct system, before the gallbladder is removed. Many of these cases show at operation marked scarring of the liver surface. Some of these scars are due to adhesions between the capsule and the adjacent viscera, but it is reasonable to believe that as a result of long standing infection in the gallbladder and ducts, much fibrosis occurs throughout the liver. This constricts ducts and canaliculi, with partial or complete obstruction to bile drainage from groups of liver cells. After all infection is cleared up those cells which have free drainage will hypertrophy while those working against back pressure will atrophy, and in this way liver function will be reestablished. This process of recuperation, then, will of necessity take longer in those cases where most damage has been done, and the resulting postoperative symp-

toms will be slower to clear up.

One fact that this series has impressed upon me is that a patient can have gallbladder disease and other diseases at the same time. A patient seeks a doctor's aid to be cured of all that ails him, but we are prone to make a diagnosis of a single disease, and then be chagrined to have him remain sick after he is cured of that particular ailment. In this series there were encountered seventy-four diseases other than cholecystitis, for which forty-nine other operations were done in conjunction with cholecystectomy, either at the same time or later during the patient's stay in the hospital. The diseases for which these operations were done included peptic ulcers, both gastric and duodenal; nephrolithiasis and nephrophthisis; cancer of the uterus and adhesions, causing obstruction. These associated disorders no doubt accounted for some of the mortality in the earlier cases.

The Operation

In the past ten years I have not employed drainage of the gallbladder in a single case. In many cases of empyema and phlegmasia I have removed the gallbladder just as in chronic cases, except that instead of ligating the cystic duct I sutured a small tube into the open stump in order to allow drainage. There has been no death with this type of treatment.

The advisability of drainage in the clean cases is open to question. In this series 14 cases were closed tight and dry. None of these cases showed any symptoms indicating that they should have been drained. Five cases were dry, but were closed with one rubber tissue drain to the gallbladder bed, which drained bile afterwards as late as the seventh day. In all the cases biliary drainage ceased in a few days without treatment. It is not known whether the ligature came off the cystic duct stump or whether the drainage was due to a leak from the gallbladder bed. As none of the cases closed without drainage showed evidence of biliary leakage the questions are raised: Is it possible that the drain may have contributed to biliary leakage? Should drains ever be used where there is no bleeding and where the duct is securely ligated?

In all chronic cases where the duct was ligated, No. 1 chromic catgut was used and

two separate ligatures with their knots were placed on opposite sides of the duct.

When the gallbladder was stripped from its bed, the peritoneum was incised on the gallbladder side, and its edges were approximated with No. 1 plain catgut, so that no stitches were put through the liver tissue.

It is my belief that it is better to leave a gallbladder bed open than to suture through liver substances. In some cases a biliary drainage has been seen to come from stitch holes and persist for several days.

Postoperative Treatment

The most important part of the postoperative treatment is diet. Patients are now advised to eat a fat free diet until there is no indigestion or "gas." If indigestion is severe, and especially if there is a tendency to constipation, the alkali and sulfate mixture, described as a diagnostic aid, is helpful. This consists of equal parts of sodium bicarbonate, sodium sulfate, magnesium sulfate, and magnesium carbonate. One drachm should be taken in water before meals. This has been found to give more relief of postoperative symptoms than any other medical treatment.

Summary

A review of 250 cholecystectomies has yielded the following statistics:

Died	14
Cured	151
Improved	49
Drain	12
Drain not recorded	88
Closed without drain	14
Appendectomy	128
Other operations	49
Other diseases	74
Previous appendectomy	5

It is my belief, based on twenty years' work with gallbladder disease, that cholecystectomy is the best treatment for cholecystitis.

Hydrotherapy for the Control of Fever.—Nowadays, we seldom attempt to control fever by administering antipyretics, and hydrotherapy is far less frequently employed than heretofore. Formerly, much of the time of the nursing staff was taken up in giving baths of some sort or other, but now, aside from the daily bed bath, comparatively few patients receive hydrotherapy. I think the best guide for prescribing hydrotherapy is not so much the height of the fever but rather the comfort of the patient. Many feverish patients are restless, irritable, and generally uncomfortable, and they can be made more comfortable by a sponge bath.—Walter L. Niles, in a Conference on the Management of Fever, New York State Journal of Medicine, 40:1741 (December 1) 1940.

CHANGING TRENDS IN THERAPY

JOHN A. ROSE, M. D.

WINSTON-SALEM

After several years spent in teaching clinics which were concerned with psychotic and neurotic adults, I went into the child guidance field. In that field I found practice at quite a different level from that prevalent in my previous experience. At present I am engaged in getting a teaching department organized; an integral part of that set-up is a child guidance clinic. Other divisions of the department are beds for psychotics, beds for psychosomatic study, consultation service to other departments, and neurology and neurological research. In each of the divisions my experience in child guidance clinics has changed the plan of organization and practice. I think this change may bear some scrutiny. In order to get at this I shall first have to go into child guidance clinic history.

About eighteen years ago the Commonwealth fund started the child guidance movement by establishing demonstration clinics in various large cities. The research work of Healy⁽¹⁾ in delinquency in Chicago was the body of experience upon which a plan for this work could be based. Healy suggested a four-fold program of physical, psychological, psychiatric and social study. Clinics were launched, with psychiatrists, psychologists, and social workers. At this time the broad objectives of clinics were to prevent psychoses and improve delinquents. The emphasis on prevention was great. At that time most psychiatrists who went into this field had had little experience with the psychoneuroses and much with the psychoses. As Helen Witmer⁽²⁾ noted, a program which aimed at decreasing the number of commitments backfired and produced pressure for more. A more frank self-criticism soon suggested that there were few true psychoses of children and that for the most part such diagnoses were not justified. Lately in several research programs it has been shown that we have no valid anamnestic

data for anticipating psychosis. Besides this, most parents who brought children wanted help and not a diagnosis which only indicated that the situation was hopeless. I believe that the diagnosis of a psychosis, constitutional inferiority, or feeble-mindedness has often been made to cover the fact that the psychiatrist actually did not know what to do or how to help. On the whole, people will not pay to hear such poor prognosis for their children. Child guidance clinics had to perceive that if they were to survive, they must at least try to keep the parents with their children.

This early work seemed to indicate that a theory of personality disturbance based on a study of the psychoses and springing largely from Kraepelinian psychology⁽³⁾ was not useful in helping children. The objective of preventing psychosis was unreal, because nobody can work on preventing something when the signs of incipience are not known. This objective has been largely dropped, and the basis of child guidance work is now helping a parent and child with the problem they bring at whatever point they can begin to work on it. The work with delinquency further bore out the practicability of this plan. Delinquents have been helped where parents supported the move they made in coming for help.

As child guidance clinics went on, two things helped give a new philosophy of the birth of human disturbance. In early years social workers had gone into the homes to investigate living conditions. It soon seemed that the relation of the parent to the child was more constantly a cause of disturbance than any environmental factor. When this factor was first recognized, social workers began to put their efforts in telling the parent how to change, or often in telling other social workers how to work with parents. Many have not gotten beyond this stage, because most parents at least *seem* to want to be told, but actual experience has shown that either they cannot act on the advice or they have to fight it. As a matter of fact, most advice given by psychiatrists on matters of living is based on some philosophy or other, which is probably already known by the patient. In a world full of "insight" there remain those who cannot act

Read before the North Carolina Neurological and Psychiatric Association, Morganton, October 2, 1941.

From the Department of Psychiatry, Bowman Gray School of Medicine of Wake Forest College.

1. Stevenson and Smith: Child Guidance Clinics, New York, The Commonwealth Fund, 1931.

2. Witmer, Helen: Psychiatric Clinics for Children, New York, The Commonwealth Fund, 1940.

3. Kahn, Eugene: Psychopathic Personalities, New Haven, Conn., Yale University Press, 1931.

to help themselves, no matter what they know.

The result of this new experience was that clinics had to get a new way of working, to establish what was the right place to work, and to get a process of working with parents and children which was helpful, not just advisory.

A re-oriented objective was set up: to help a parent and child get at the solution of the problem *in themselves*, without the psychiatrist's having a preconceived idea of what that solution should be. It is obvious that this involved direct personal therapy for the child. Parents were asked to come to the clinic. As workers began to discuss the child's situation with the parent and as psychiatrists began interviews with the child, a new mechanism was set going.

A program⁽¹⁾ was set up whereby clinic cases were accepted only after the person most responsible for the child came to the clinic and decided, after coming, to bring the child later. A great many people came in to talk who did not really want to come for help. These parents often put the blame for the problem on the physical situation, even when they had previously been to many pediatricians. It is obvious that if the clinic accepted such cases for diagnosis, a repetition of the previous consultations would take place. Therefore it was decided not to do physical examinations. In this way one could say to a parent that the clinic was a place for treating behavior disturbances—not physical ones—and that she should consult with a pediatrician until the physical condition was cured or until she decided that the condition was psychological. Much more was gained than was lost by dispensing with the physical examination. The whole basis for seeing the child was changed vitally. Instead of the doctor's doing something *to* the child, the child was doing something *with* the doctor, and so the importance of the child's conduct in the relationship was understood.

Up to this point, then, these changes in the mechanics of doing the job had to be made, purely in order that the clinics might survive. Out of working with the parent to get a solution for her problem, a philosophy of growing up came into being on the basis of experience. As it was seen that the mother's feeling for the child is the most

authentic environment, so it must be seen that both healthy growth and disturbance come out of that relationship. Any philosophy of psychological maturing of individuality which is valid must see that the parent-child relationship is the early food of growth, and that either good or bad can come from it. I believe that human difficulty arises first out of the parent-child relationship, and therapy for children must work with both sides of that relationship⁽²⁾. The essence of therapy is giving meaning to the behavior of children or adults who come willingly and purposefully. The ability to practice this method comes from supervised experience in working with people and involves change for the person who would do it. The psychiatrist must become self-conscious about his personal philosophy in order to avoid using it instead of allowing the patient to make use of him.

With this new approach to child guidance, parents and children who have troubled relationship can come to a clinic and be helped in a process going on for one hour a week for eight to twenty weeks. I believe that this treatment philosophy grew in the soundest way anything can grow—through practice and experience—and that good results are obtained.

How, then, can this rather different system be applied to the entire program of a teaching department? I would raise the question: What are the real objectives of psychiatry? It seems that psychiatry has taken on new jobs and retained old ones without having to stand on results. Today psychiatry has in its fold state hospital care, psychopathic clinic care, individual therapy, psychosomatic studies, ward consultation on other services, clinical neurology, research neurophysiology, advice to social work, medico-legal work, crime study, war work, and many other fields. With all of these to choose from in teaching psychiatry, what should be chosen? Have all these things the same objectives? Do these objectives have any possibility of fulfillment? Are all of these things unique to psychiatry and best done in that field?

State hospital care is certainly something that must be included legitimately; yet a state hospital which assumes only diagnosis and custodial care as its jobs is certainly not

4. Dawley, Almena: *Diagnosis—The Dynamic of Effective Treatment*, J. Social Work Process, v. 1, no. 1.

5. (a) Allen, F. H.: *The Dilemma of Growth*, Arch. Neurol. and Psychiat. 37:859-867 (April) 1937; (b) Rank, Otto: *Will Therapy*, New York, Alfred A. Knopf, 1936.

representative of psychiatry. The turnover in assistant physicians in state hospitals attests the lack of intellectual challenge there. I think that an informed public will make increasing demands on state hospitals to show results which are not just in terms of the economic self-sufficiency of the hospital. I do *not* think one can advise students and men in training to go into state hospitals until more emphasis is placed on helping the patient.

With reference to in-patient psychiatric clinics, I believe much change for the better can be made. They have continued to exist, not so much because they really help, but because people dread commitment in a state hospital, and such care temporarily staves off commitment. In many teaching hospitals these clinics serve the doctor and the interests of a research program rather than the patient. All great advances in medicine have come through sound research; but the attempt to apply medical research methods to psychological problems has interfered with the business of helping a patient to get well. Research on the individual at his expense is justified only if the knowledge gained helps many more people to get well. Research in psychosomatics has been helpful to medicine because it aids in medical differential diagnosis. Actually, this study is being taken over into medicine and pediatrics, and soon *will not* be an authentic field for psychiatry. Research in mental mechanisms typical of Kraepelinian and Freudian psychology has clearly proved to be in the interest of the physician, and not the patient. After the physician gets the material, the patient must still solve the problem of living in the present; too little research has been done in the *method* whereby one may help him to do that.

Therefore, the trend in the in-patient program seems to be toward letting the diagnosis of psychosomatic problems gradually go into internal medicine. The treatment of organic psychoses — luetic, arteriosclerotic, degenerative, and those a part of a more general disease picture—are only psychiatric because of the custodial problem. They are intrinsically medical in treatment, and I cannot see mere custodianship as being the unique job of psychiatry.

In the organization of a clinic, one may learn another lesson from child guidance practice. The child who is taken out of his

living difficulty by being removed from school, sent on a visit, or brought into a hospital cannot be successfully treated in the better sense of the word, because when he goes back into the place where he has trouble, he has no help in meeting the trouble. Attempting to treat the "just nervous" neurotic person in a hospital has the same difficulties, plus the fact that the whole atmosphere of hospital care is so restful that there is no reality at all to face the patient. The rest cure theory of Weir Mitchell has no organic basis. We know that the neurotic avoids any action which brings him face to face with actually working on his real living difficulties; he puts it off as long as he can, and the rest cure in-patient plan usually works in beautifully with the psychological evasion. I therefore believe that if such a patient is admitted to the hospital, it should be on the medical service. In that way, one does not get into the trap of having to prove the psychological origin of symptoms and then treat it.

The question has been often raised whether a patient who has physical disease should be accepted for psychological treatment. Medicine ought to be held responsible here. I believe psychiatry has been held back in its authentic field of treatment method because it has been so busy trying to be competent in another specialty. It is possible that psychiatrists cling to medical competence because they have no belief in other kinds of therapy.

It seems to me that the best design for an in-patient service, then, would be a diagnostic service, shared by medicine, in which the serious problem of psychiatry would be to work out treatment methods for the psychoses. In connection with this work, I am certain that much largely physical research can go on. However, in view of the fact that shock treatments, freezing treatment, etc., have not yielded much better figures⁽⁶⁾ than Rush's tranquilizer of the 1700's, and that all the millions that have been poured into biochemical and physiological study of every organ system have yielded no key to the major psychoses, I believe it is only fair to do some research on psychological treatment method. Obviously, one cannot work with a disturbed patient who cannot relate to anyone; but what of those who improve under shock or spontaneously; how about a plan

6. Romano and Ebaugh: Prognosis in Schizophrenia, *Am. J. Psychiat.* 95:553-596 (November) 1939.

for meeting their needs in returning to human relationship? Perhaps working on this will yield no better figures, but except for a few psychoanalyses, which are admittedly impractical from a time and money standpoint, no trained person has ever worked systematically at a plan for therapy that has a sound basis, a beginning and an end. At least, if he has, his work is not in the literature.

The great fallacy of medicine today is that psychotherapy is so simple that anyone can do it. I am astounded when I hear medical men discussing how they advise patients to divorce, to have affairs, to have more intercourse, and to place their children in somebody else's care.

I have to admit that psychiatry, in trying to make a case for itself and its service, has increased the contempt which doctors have of the inviolability of human individuality. They take responsibility for deciding things that any man, in order to be a man, must decide for himself. This kind of responsibility for social living cannot be a part of democratic process⁽⁷⁾; it has in it the sickness of fascism—the system whereby a chosen few supermen decide the destinies of the worms beneath them in the name of kindness.

How can one teach physicians the responsibilities of a therapeutic relation in simple human terms? Here, too, experience in child guidance work helps. As a contrast to the "lecture-demonstration-and-turn-the-student-loose-with-a-patient-and-let-him-flounder-system", I conceive of a system based on a discussion of individual living psychology in the sophomore year, followed by a supervised clinic experience in which the students see patients by appointment and carry a case through to some kind of an ending. The instructor would then go over with the student in conference the structure and meaning of the interview he has had, so that he may see his part in it. In this way, learning for the physician is a real human experience. He may not go into psychiatry, but wherever he goes, he carries an increased respect for patients and for the difficulty of helping them to get what they want, as opposed to his own ideas of what might be good for them. Child guidance clinics have realized that the personal psychology of the therapist and motivations springing from that enter

much more into dealing with children than the average physician is willing to admit.

With reference to teaching diagnosis with the psychoses, I would hold to a minimum that old popular side show of psychiatry, the demonstration of a freak to an amphitheatre full of students. There is little learning, but much entertainment value there.

In any teaching program the problem always arises about ward consultations and studies in psychosomatics. Actually most of the triumphs that psychiatry has had in selling consultation service to medical and surgical services have been hollow. A request for consultation all too often is the way the internists and surgeons have of getting rid of responsibility. I have found that most medical house officers have little doubt as to the diagnosis when consultation is asked; it is merely that they do not know what to do and would rather let somebody else have the responsibility. Because of this it seems to me that a psychiatric liaison officer should be placed on the other services for diagnosis, and that consultations from the department of psychiatry had better be with the house officers concerned than with the patient. In this way the house staff can get psychological help for their patients—a far more difficult problem than diagnosis. The Commonwealth Fund has recognized this plan in giving special fellowships to pediatricians and medical men to gain experience in psychiatry and then take it back into their departments.

Why should a child guidance clinic have any part in the program of a teaching department? There are several reasons. In the first place, to centralize the teaching around in-patient care of psychotics means emphasis on the diagnostic-judicial function of psychiatry and discourages people from coming for help with their living problems. Next, the economic aspect of care for the psychoses is so great that it tends to overshadow the equally great or greater need for other kinds of services. Having a child guidance and out-patient department as important as the in-patient department to start with, or even more important, tends to get better care for more patients. Moreover, in the child guidance clinic there is a lesson for getting along with social workers. Child guidance was the first field in which any real distinction was made between social case work and therapy⁽⁸⁾. For the most part, psychiatrists treat

7. Rose, John A.: *Democracy and the Philosophy of Will Therapy*, *Psychoanalytic Rev.*, to be published.

social workers as glorified orderlies to carry out the will of the physician. Because child guidance is not only child psychiatry, but also a social agency for child welfare, a clinic is the best place to thrash out the *pro's* and *con's* of cooperative work. Beyond this, having a child guidance clinic as a part of a community helping program always makes the patient's welfare come first. In this way, doctors in the making are taught the importance of service to the patient rather than to research and the physician.

The question of neurology is more complicated. This specialty got into psychiatry because of the isolationist position⁸ that the Kirkbride group took toward the "just nervous" person. The neurologist simply rationalized living difficulty by calling it "just tired nerves." Out of this came the fashion of calling the neurotic personality an illness. The philosophy of blaming disturbing behavior, for which the individual is responsible, upon illness, which comes from outside through no doing of the individual, is a backward step in treatment. It was adopted because doctors tried to convert behavior into something medical that they could work with. In order not to be moralistic to the neurotic, the physician believed that he must first conceive of the difficulty as something the patient was not responsible for. With this concept, there is literally no way that that patient through the physician's help can become the master of his fate and the captain of his soul.

Beyond this, neurology remains too much a part of psychiatry just because man is too complicated to understand. If one did not have to understand him, but could just change circuit X in the brain and straighten him out, it would be much easier. The ever recurring use of brain coring operations is the expression of this wish. Apparently the Egyptians were caught in the same dilemma.

Summary

I believe that experience in the child guidance field has given us a precedent that will be useful in reorganizing our concept of what psychiatry should do and how it is best taught. Above all, I think the conclusion of the child psychiatrists that all services should grow out concentrically from a focus

of skill in direct personal therapy is a sound one; and that wherever psychiatry has taken on jobs which work against the fulfilling of that function, steps should be taken to change the program. And if this cooperative task with society and the medical healing arts is to be done most efficiently and usefully, a constant check must be made to see: (1) that we are doing our own job as skillfully as we are able; (2) that the new fields we are asked to take on can legitimately be entered; and (3) that there is still reason for some of the old services to be continued.

VINETHENE ANESTHESIA

MARVIN L. SLATE, M. D.

HIGH POINT

This paper is based upon the statistics gathered during four years' experience with the use of vinethene anesthesia in operative procedures ranging from myringotomy to mastoidectomy and appendectomy, and including 100 tonsillectomies and adenoidectomies¹.

Physical Properties and Pharmacology

Vinethene consists of about 96.5 per cent of pure vinyl ether, about 3.5 per cent of absolute alcohol, and about 0.1 per cent of an oxidation inhibitor. The alcohol is added to prevent freezing of moisture on masks or in gas machines due to the low temperature induced by the high volatility of vinyl ether; and the oxidation inhibitor is introduced to offset rapid decomposition on exposure to light and air.

Vinethene is a clear liquid dispensed in brown bottles. It has a characteristic odor, a low boiling point (82 to 87 F.), and it decomposes when exposed to light or air. It should be kept in tightly stoppered bottles and stored in a cool, dark place. If properly stored in unopened bottles, it will keep without deterioration for at least two years. The expiration date is printed on the label of each bottle. Since exposure to air may induce decomposition, vinethene should not be used for anesthesia after the container has been opened for more than twenty-four

Read before the Section on the General Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinebluff, May 21, 1941.

8. Taft, Jessie: *Function and Process in Psychiatric Social Work*, read before the American Association of Psychiatric Social Work, 1939.

9. Deutsch, Albert: *The Mentally Ill in America*, New York, Doubleday-Doran, 1937.

1. The statistics presented in this paper have been gathered in collaboration with Dr. M. B. Leath of High Point, who performed the myringotomies, the tonsillectomies, and adenoidectomies, and the mastoidectomies; and with Drs. George T. Wood, T. M. Stanton, and Glenn G. Perry of High Point, who did the general surgery.

hours, unless the bottle is securely stoppered and kept in an ice box.

The preparation and the properties of pure vinethene (divinyl ether) were described by Ruigh and Major. Leake, Knoefel and Guedel studied its anesthetic properties in animals, and Gelfan and Bell began the study in human beings. A careful study of its physiological, pathological and clinical aspects was made by Goldschmidt, Ravdin and Lucke, and a most thorough investigation of its action on the liver was carried out by Bourne and others. These studies and trials indicated that vinethene undoubtedly had a place in the field of anesthesia. Its anesthetic potency is about four times that of ethyl ether and slightly greater than that of chloroform. It has about the same explosive hazards as ethyl ether.

Subjects and Procedure

The patients to whom I have administered vinethene anesthesia ranged from 19 months to 16 years of age. More than 66 per cent were between 4 and 8 years of age. The pre-operative condition of these patients was satisfactory. The majority were in very good health, although a small number showed evidence of malnutrition.

Premedication

The following table shows the type and amount of medication used. This was determined by the age and the general nutritional state of the patient. As with any general anesthetic, atropine should be used in all cases to prevent excessive salivation.

Age	Atropine	Seconal	Morphine
2 years.....	1/400 grain		
3 years.....	1/300 grain		
4 years.....	1/200 grain	1/2 grain	
4½ years.....	1/200 grain	3/4 grain	
5-6 years.....	1/150 grain	3/4 grain	
7-11 years.....	1/150 grain	1½ grain	
12-13 years.....	1/150 grain	1½ grain	1/8 grain
14-16 years.....	1/150 grain	1½ grain	1/6 grain

It was found to be unnecessary and inadvisable to give pre-medication to those patients who were to be ambulatory immediately after operation.

Administration

The anesthetic was administered by the open drop technique, using twelve to fourteen layers of gauze, approximately 8 by 8 inches, placed over the face in such a manner that the area of gauze upon which the

anesthetic was dropped did not come in direct contact with the skin or mucous membrane. Although caution is given against causing a burn or facial irritation, this accident did not occur in our series. The use of a wire ether mask of the Yankauer type is suitable in older children, and I used it where vinethene was employed as the induction agent preceding ether anesthesia. The eyes were protected with liquid abolene or mineral oil. The dropper tip was held close to the mask to prevent loss by evaporation in the air. The rate of administration was slow; only four or five drops were given during the first few breaths, in order to prevent the sense of strangling or suffocation. The amount was gradually increased as the stage of unconsciousness approached. The patient, if old enough, was advised to count aloud. Consciousness was lost within thirty to sixty seconds, and usually there was no excitement manifested, except in patients under 4 years of age, who usually cried until going to sleep. The average time required to produce surgical anesthesia was four and a half minutes. The stage of surgical anesthesia is recognized by the regular respiration of the patient and relaxation of the skeletal muscles. The eyelids remain open and the eyeballs are active in the first stage. In the third stage the lids relax, the eyeball is fixed, and the pupil usually dilates as in deep ethyl ether anesthesia. It requires from sixty to ninety drops per minute to maintain surgical anesthesia. An average of 100 cc. of vinethene is used per hour.

When intercostal activity is abolished, the patient is in the fourth stage of surgical anesthesia. This stage should be avoided. Should respiratory arrest occur, remove the mask or gauze and anesthetic agent, be sure of an open airway, immediately institute artificial respiration and administer oxygen.

Vinethene may be administered in a closed gas machine with oxygen, although I have not given it in this manner.

The amount of vinethene required for a tonsillectomy varies from 15 cc. to 50 cc., depending upon the amount of bleeding, the condition of the tonsils, and the amount of previous sedation. The average amount used was 26 cc. per patient. Where more than two patients are to be operated upon in sequence, it is more economical to start out with a 50 cc. bottle and supplement it with a smaller bottle. Vinethene is put up in bottles of 10, 25, 50, and 75 cc.

The average operating time per patient was eleven minutes. No patient was removed from the operating table until all bleeding had been checked.

No complications were encountered in this series. One patient, aged 2 years, did stop breathing temporarily and became cyanotic after the operation was started. I believe that this temporary cessation of respiration was due to opening the mouth too wide and to too much flexion of the head. The child responded well to artificial respiration and oxygen.

Recovery was rapid in all cases, and was marked by no untoward symptoms. Nausea and vomiting were conspicuously absent. This to my mind is one of the greatest advantages of this anesthetic. The absence of any excessive sweating is also a salient point.

Vinethene as an Induction Agent

Vinethene has been employed as an induction agent in all of the mastoid cases, regardless of age, except in three patients, aged 2 months, 8 months, and 8 years, in whom it was the sole anesthetic used. I have also used it routinely during the past year before ether anesthesia in general surgery. Vinethene has been a very satisfactory induction agent, because of the simplicity of administration and the smoothness and rapidity with which a state of anesthesia is produced. It is of particular advantage when a gas-oxygen induction agent is not available.

The premedication I used varied according to the ages of the patients. A barbiturate, alone or in combination with atropine and morphine, was given the night before and the morning of operation. There was no excitement attributed to the anesthetic, and only one case of nausea and vomiting, which occurred after ether was started. No cyanosis was observed.

Postoperative Course

The hospital attendants and the surgeons in charge stated that nausea and vomiting occurred less frequently, that the reaction time from the anesthetic was much shorter, and that postoperative gas pains and distention of the bowels were much less troublesome than with straight ether anesthesia.

Clinical Observations

1. Vinethene anesthesia has a brief induction period.
2. There is definitely less respiratory tract infection or irritation following tonsillectomies and adenoidectomies than with ethyl ether. Vinethene anesthesia is not adequate for tonsillectomies in adults. The patients react too quickly and the pharyngeal reflexes are too active.
3. The excitement period is negligible.
4. There was marked reduction in the number of cases of postoperative nausea and vomiting.
5. With the occasional exception of an adult, the patient has a pleasant mental reaction.
6. No postoperative complication could be traced to the anesthetic.
7. There is an absence of sweating.
8. There is a rapid return to consciousness.
9. Less time is required for postoperative care. Ten to fifteen minutes is an adequate time for the nurse to remain in attendance.
10. The anesthesia is smooth.
11. There is less mental torpor on the part of the anesthetist as a result of inhaling the fumes than with ethyl ether.
12. Administration is convenient.
13. There is less bleeding during operation.
14. There is less bleeding during the winter months than in the summer.
15. The greater the pre-anesthetic sedation, the more tendency there is for prolonged bleeding.
16. There was no evidence of any skin or mucous membrane irritation with the use of gauze instead of a mask, and without the use of a face cream.

Summary

I have used vinethene as an anesthetic in 100 consecutive tonsillectomies and adenoidectomies and as an induction agent preliminary to ether in perhaps an additional 100 cases, and have had four years' experience with this agent in short cases seen in the office and home. I feel that vinethene is unexcelled as a general anesthetic agent for office and outpatient or home practice.

Abstract of Discussion

Dr. George T. Wood (High Point): It has been a pleasure to hear Dr. Slate's paper. My interest

in vinethene anesthesia is in its use as an induction agent preceding ethyl ether anesthesia. One of the advantages I have noticed with its use is the rapidity of induction following the usual preoperative sedation without the excitement usually seen in the second stage under ether. The postoperative period is much smoother. We feed these patients earlier than we have been feeding the ether patient, often giving them semi-solid food during the first eighteen hours. Postoperative nausea and distention is much less noticeable. The perspiration loss has been decreased.

The relatively slight explosive hazard of vinethene is important.

I would add one warning about vinethene anesthetic. In one adult who was being given straight vinethene anesthesia for a minor procedure, there were a couple of moments when the patient had anoxic cyanosis. The rapidity with which this anesthetic acts calls for very close attention on the part of the anesthetist. Anything that can take a patient from consciousness to unconsciousness inside of two or three minutes has as much capacity for harm as it has for good.

Dr. L. A. Crowell (Lincolnton): I should like to emphasize the point that Dr. Wood made regarding the necessity for caution in the use of vinethene because of its rapid induction period. As he pointed out, any anesthetic agent which has a rapid induction period has a correspondingly narrow margin of safety. Those who are in the habit of giving ether anesthesia do not expect patients to be completely anesthetized for a period of six to ten minutes.

Dr. R. L. Wall (Winston-Salem): I enjoyed Dr. Slate's paper very much. I have been interested in anesthetics for the last twenty-five years, and have seen many of them come and some of them go. I think they all have their place and should be used when and where indicated. The problem today is to select the right anesthetic for the right patient. I don't believe any surgeon who uses any one anesthetic routinely gives all his patients the proper anesthetic. The anesthetist should work in close cooperation with the surgeon.

Vinethene has its distinct place. It is very much like the gaseous anesthetics, and can be used without a gas machine. I don't see that it has any advantage at all over the gaseous anesthetics if a gas machine is available. When you are called to a home to open an ear drum or perform some minor operation, you can carry a bottle in your pocket. As Dr. Slate stated, there is very little nausea and vomiting with it. I think it also has a place in tonsillectomies in children. I think it should be given only by an experienced anesthetist, because of the rapidity of its action.

Dr. Slate: I believe this newer type of anesthetic is definitely indicated in short surgical operations. We are using it particularly in tonsillectomies and adenoidectomies.

The draft itself can be made a contributory public health measure. If the army and the navy will assemble none but tuberculosis-free forces two objectives will be served. The first of these is an army of effectives instead of potential invalids; the second is the preventive medical value of discovering in two million recruits perhaps a hundred thousand young men with real or suspected tuberculosis needing attention. In the case of her army Canada has actually achieved the first objective. The United States cannot do less.—Kendall Emerson, M.D.

THE MECHANICS OF CONTRACEPTION

W. C. HIGHSMITH, M. D.

FAYETTEVILLE

A full knowledge of the mechanics of contraception is increasingly recognized as an integral part of medical practice. While the application is definitely linked with the specialty of obstetrics and gynecology, it is important in every branch of medicine, especially in the general practice of medicine and surgery.

This paper is for the general practitioner whose training in contraception or birth control was limited or non-existent in his medical school days and whose opportunities for subsequent clinical training have been unsatisfactory.

Contraceptive methods are: (1) diaphragms, cervical caps, etc., and jelly; (2) jellies and suppositories; (3) jellies with condom; (4) foam-sponge; (5) douche; (6) withdrawal; (7) surgical sterilization without unsexing; (8) abstinence; (9) coitus reservatus, prolonged intercourse, orgasm for the woman, none for the man; (10) use of the safe period (generally speaking the week preceding the menstrual period).

It is incumbent upon the general practitioner to familiarize himself with all contraceptive methods, for it is he who sees all classes and colors, the bride and groom, and the couple before marriage. The premarital examination now required in this state should help disseminate sound sex instruction, and help eliminate "drug store birth control." By this I mean the diaphragm and jelly available at about all drug stores—the diaphragm that is supposed to be a universal fit, but proves in the majority of cases a failure, because the woman frequently has not the slightest knowledge of her genital anatomy and has, of course, been denied the required fitting. Many of these young brides using the drug-store-bought diaphragm and jelly become pregnant because they are ignorant of the correct placing. This creates a psychological barrier against the fitted diaphragm. The woman has no faith in it, and if often requires much patience and skill on

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A film demonstrating the fitting of the various types of vaginal and cervical diaphragms was shown with this paper. This film was furnished by the American Birth Control League.

the part of the doctor who may fit her later to overcome this barrier.

The condom or sheath is the simplest and most generally and readily available method. Properly used, especially with a jelly, it constitutes as efficient a method as any. When the bride is not yet fitted with a diaphragm this is the method of choice. It is not for the selfish man or for the careless one. When the placing of the condom interferes with the love play by defect or defeat of erection, it is often advisable for the woman to make the placement as a sign of readiness.

Withdrawal of the penis just before ejaculation is a method as old as history itself and one that is employed the world over. There are arguments pro and con relative to the possible injurious effects. In my experience I have found it to be, in most cases, mutually unsatisfactory.

Contraceptive advice is given for the following purposes: (1) to allow spacing of children; (2) to preserve the health and well being of the mother; (3) to promote the health and proper rearing of the children; (4) to prevent illness; (5) to prevent transmission of hereditary disorders of certain degrees; (6) to prevent conception during the active stages of certain diseases; (7) to keep from aggravating chronic disorders.

In each case where a diaphragm is to be fitted, the physician takes the history, the bladder is emptied, and the vagina is examined bimanually and with the speculum. The physician then measures the vagina, estimates the size required, and inserts the diaphragm. The woman examines the diaphragm in place, removes and replaces it, learning the feel of the covered cervix. She is instructed to return in one week, during which time she practices placing the diaphragm.

Acceptance of any given method will, of course, vary with such factors as native intelligence, education, religion, emotional adjustment to sex, and genital anatomy. When a given method is accepted, it is up to the physician to give proper instruction. Discussing contraception with a woman often presents an opening through which the sex life is revealed, and if a maladjustment is present the physician should strive to correct it.

In conclusion, I wish to quote J. Whitridge Williams, one time professor of obstetrics at Johns Hopkins University: "Where should

we stand as medical men? To my mind there can be only one answer—We must give contraceptive advice whenever it is medically indicated. It is just as much our duty to give such advice as it is to advocate the employment of any other prophylactic measure. We must advise the multiparous woman suffering from chronic nephritis not to become pregnant, and the same applies to tuberculosis and serious heart disease. Consequently, if we feel that such advice is necessary we must give directions as to how it can be made effective, for if we do one without the other we are failing in our duty as physicians. Similar advice is indicated when we see a patient steadily going down hill as the result of pregnancies recurring at too short intervals, as well as in certain neurotic and maladjusted women whose entire life is disturbed by a constant dread of pregnancy."

A good manual by Dickinson and Morris on the technique of contraception can be had by writing Williams and Wilkins in Baltimore. Any of the recognized manufacturers of contraceptive devices will be glad to furnish you with a model. It is not necessary to go to a clinic to learn the mechanics of contraception.

Alkaline Medication in Bleeding Ulcers.—I doubt the necessity of alkaline medication in bleeding ulcers and suspect that often it is a factor in the disturbed chemical condition of the patient. Our patients have seemed to do equally well without any such medication.—T. Grier Miller: *The Management of the Complications of Peptic Ulcer*, New England J. Med. 224:403 (March 6) 1941.

Concentrated Liver Extract Now Offered by Squibb

Rounding out their line of hematinics, which is now virtually complete for most medical purposes, E. R. Squibb & Sons, New York, have announced the availability of Concentrated Liver Extract. The new item is a sterile, aqueous, highly concentrated solution obtained from edible liver, preserved with 0.5 per cent phenol.

Concentrated Liver Extract Squibb offers the advantages of being low in total solids and exceptionally clear and light-colored. It contains 15 units (injectable) per 1 cc., standardized on the basis of the hematopoietic response in Addisonian pernicious anemia as defined by the U. S. P. Anti-Anemia Preparations Advisory Board.

Concentrated Liver Extract Squibb is given by deep intramuscular injection, usually into the deltoid muscle. In treating pernicious anemia, 15 units (1 cc.) are given daily for two days, followed in about 10 days by 15 units weekly until the blood picture is within normal limits. The average maintenance dose is 15 units every one to four weeks.

The new Squibb product is supplied in 1-cc. vials containing 15 units (injectable) in boxes of 3 ampuls; and 5-cc. vials, containing 15 units (injectable) per 1 cc.

SULFONAMIDES IN SURGERY: A REVIEW OF THE LITERATURE

ARTHUR DETALMA VALK, M. D.

WINSTON-SALEM

While sulfanilamide was synthesized and utilized in the dye industry in Germany in 1908, it was not until 1932 that prontosil was produced. In 1935 its merits, and those of the more soluble neoprontosil, were announced to the world. About this time French investigators claimed that the prontosils were reduced in the body to liberate free sulfanilamide, and they demonstrated the anti-bacterial effect of this product.

In 1936 Long and Bliss⁽¹⁾ announced their findings and expressed the view that the drug acted directly on the micro-organism, producing bacteriostasis. Many theories have been offered as to the mode of action of sulfonamide compounds, but the one generally accepted for sulfanilamide assumes that para-amino benzoic acid is displaced by the drug⁽²⁾.

Para-amino benzoic acid is probably produced by the bacterial cell and is essential for the growth of the organism (the streptococcus in Woods's experiments). This acid in chemical structure resembles sulfanilamide, and it is assumed that its displacement by this compound inhibits the growth of the micro-organism. Woods has shown that when para-amino benzoic acid is present in adequate concentration it will inhibit the bacteriostatic activity of sulfanilamide. This finding could readily account for the fact that where an abscess has developed, sulfanilamide has little effect.

During the past five or six years several thousand sulfonamide compounds have been synthesized, six of which have been accepted and are available to the profession at present. These are: (1) sulfanilamide, (2) sulfapyridine, (3) sulfathiazole, (4) sulfaguanidine, (5) sulfadiazine, and (6) sulfacetamide. Another recently developed compound, sulfasuxidine, has been suggested as a sub-

stitute for sulfaguanidine, but has not yet been accepted.

While practically all men who have had liberal experience with the use of sulfonamides in surgery agree that these drugs are all valuable agents, there is still divergent opinion as to their relative merits.

Up to the present time, sulfanilamide has been used more extensively than any of the other compounds, although sulfathiazole and, lately, sulfadiazine are being given more consideration.

It is generally recognized that all of the sulfonamides are potentially dangerous, and that they interfere not only with the metabolism of the bacterial cells, but also with the cellular metabolism of the host. Individual susceptibility plays an important part, and it is often found that a patient who is hypersensitive to one of the drugs tolerates another without difficulty. These drugs are more readily absorbed by some patients than by others, and absorption may vary from day to day in the same individual. Their effectiveness is further influenced by the portion of the drug that is acetylated, by its solubility, and by the rate of excretion. For this reason it is essential that the blood concentration be determined frequently. It is generally accepted that the ratio of conjugated and free forms is 2 to 1.

Bacteriologic data are necessary for intelligent use of these drugs, for the different compounds have a considerable degree of specific action against the various species of micro-organisms, although they all apparently have some bacteriostatic action against several species.

In general, sulfanilamide is more frequently used in streptococcal infections, sulfathiazole and sulfadiazine in staphylococcal infections, and sulfaguanidine and sulfasuxidine as intestinal antiseptics. Sulfaguanidine and sulfasuxidine are given orally. The other compounds may be given orally, by rectum, by hypodermoclysis, or intravenously in the form of sodium salt in a 5 per cent solution.

In surgery, it has been fairly well established that there are distinct advantages in the local implantation of the compound directly in the tissues. So far clinical experience has been limited to sulfanilamide and sulfathiazole. Sulfanilamide has been more

Read before the Journal Club, Bowman Gray School of Medicine of Wake Forest College, December 15, 1941.

1. Long, P. H. and Bliss, E. A.: Para-Amino-Benzene-Sulfonamide and Its Derivatives: Experimental and Clinical Observations on Their Use in the Treatment of Beta-Hemolytic Streptococcal Infection. *J. A. M. A.* 108:32 (January 2) 1937.

2. Woods, D. D.: Relation of P-Aminobenzoic Acid to Mechanism of Action of Sulphanilamide, *Brit. J. Exper. Path.* 21:74 (April) 1940.

favorably considered, because it is less irritating to the tissues.

In certain surgical procedures, such as gastric resection, intestinal anastomosis, or abdominal-perineal resection of the rectum, in which there is a possibility of infection, the local use of sulfanilamide is a valuable prophylactic measure. The compound is used not only over the immediate operative field, but in the abdominal wound as well. From the Mayo Clinic⁽³⁾ comes the suggestion that such wounds be irrigated with an .8 per cent solution of sulfanilamide. The authors state that the local use of the drug is of greater value in prevention of infection than in treatment of infections already established.

Ravdin⁽⁴⁾ was among the first to report the favorable influence of sulfanilamide in the treatment of peritonitis associated with appendicitis. He cited 552 cases in which the drug was not used, with a mortality of 1.5 per cent, and 257 cases in which the drug was used, with a .4 per cent mortality.

Sulfanilamide was not used intraperitoneally in these cases, but an .8 per cent solution in normal saline was given by hypodermoclysis. Eight grams were given the first day in three doses at eight-hour intervals, and the dose was decreased 1 Gm. daily. This treatment was usually stopped by the fifth to the seventh day. No unfavorable reaction was noted.

Reports from the Roosevelt Hospital⁽⁵⁾ on the intra-abdominal application of sulfanilamide are most interesting. Two series of cases of acute appendicitis were reported: one consisting of 741 cases in which the drug was not used, with a mortality rate of 2.7 per cent; and the other a series of 204 cases treated with sulfanilamide, with *no deaths*. In the first series there were 59 cases with abscesses, with a mortality of 6 per cent, and 100 cases of peritonitis, with a death rate of 11 per cent. In the second series there were 21 abscesses and 31 cases of peritonitis with *no deaths*.

Two thirds of the total amount of the drug was implanted in the peritoneal cavity, and

one third in the abdominal wound. About 175 mg. of sulfanilamide per kilogram of body weight was used. The average peak of concentration in the blood was reached in about fourteen hours, and was about 6.9 mg. per 100 cc. The part applied directly to the tissues provides a much higher concentration of the drug in a relatively small area, and the absorption is quite rapid, with a correspondingly rapid rise in blood concentration. The blood concentration will drop quite as rapidly unless a fair amount of the drug is placed in the wound. Absorption in the wound is slower and tends to maintain a prolonged high level of blood concentration as well as a very high local concentration. It has been demonstrated that within a few millimeters from the wound edge the tissue concentration may be as high as 400-500 mg. per 100 cc. of fluid. The use of the compound postoperatively should be continued, either orally or parenterally, as long as needed.

Where there is considerable exudate substances are present that inhibit the antibacterial action of the drug, and where drainage is instituted there is necessarily some loss of the compound. Under such conditions a larger amount of the drug might be used.

In infections of the biliary tract, caution must be exercised in the use of sulfonamides, because of their toxic effect upon the liver, which may already be damaged. However, Cleveland⁽⁶⁾ states that "derivatives of sulfanilamide are not contraindicated in the presence of obstructive jaundice when some infection for which sulfanilamide is indicated is present." Dr. T. T. Frost, Pathologist of the City Memorial Hospital, Winston-Salem, has recently reported two deaths from necrosis of the liver and nephrosis of the kidneys—one due to sulfanilamide and the other to sulfathiazole.

A very interesting report by Diveley⁽⁷⁾ describes the use of sulfathiazole in the treatment of infections of the bones and soft tissues by preoperative systemic administration and local implantation at operation. Of particular interest was the comparison of blood concentrations obtained by intravenous administration of the drug to those ob-

5. Herrell, W. E. and Brown, A. E.: Local Use of Sulfanilamide Compounds in the Treatment of Infected Wounds. Proc. Staff Meet., Mayo Clin, 13:611 (September 25) 1910.

1. Ravdin, I. S.; Rhoads, J. E., and Lockwood, J. S.: Use of Sulfanilamide in the Treatment of Peritonitis Associated With Appendicitis. Ann. Surg. 111:53 (January) 1910.

5. Thompson, James E.; Brabson, John A.; and Walker, J. M.: The Intra Abdominal Application of Sulfanilamide in Acute Appendicitis. Surg., Gynec. and Obst. 72:722 (April) 1911.

6. Cleveland, W. H.: Sulfanilamide Therapy in the Presence of Severe Injury to the Liver and Jaundice. Proc. Staff Meet., Mayo Clin, 14:680 (October 25) 1939.

7. Diveley, R. L. and Harrington, P. R.: Chemotherapy in Infections of the Bones and Soft Tissues. J. A. M. A. 117:1868 (November 29) 1941.

tained when the drug was given orally. Intravenously, .06 Gm. of sodium sulfathiazole was given per kilogram of body weight, the average dose being 4.1 Gm. The average blood concentration after five minutes was 47.5 mg. per 100 cc. of blood; after one hour it was 12.15 mg.; after two hours, 10.75 mg.; and at the end of four hours, 5.25 mg. The average dose by mouth was 6.6 Gm., and the average blood concentration after an hour was 4.2 mg. per 100 cc.; after two hours, 4.1 mg.; after three hours, 5.9 mg.; and at the end of eight hours, 4.7 mg. Intravenous administration had no effect on temperature, pulse, or respiration.

According to Long⁽⁸⁾ sulfadiazine has a definite advantage over the other compounds in that a higher blood concentration in the free form is obtained with the same dosage, with no injury to the spleen, liver or kidney. He claims that sulfadiazine is as effective as sulfathiazole in staphylococcus infections, and is quite equal to sulfanilamide in streptococcal infections, being particularly effective in the hemolytic type. The toxic symptoms with sulfadiazine are slight.

The use of the sulfonamide derivatives in urology is quite general. They are administered systemically, preoperatively and post-operatively, in most cases where infection exists, and are implanted locally at the time of operation.

From the Urological Department of the Mayo Clinic⁽⁹⁾ Thompson and others report a case of anuria following the use of sulfadiazine. The patient received from 4.9 to 5.8 Gm. of the drug over a period of seven days. On the eighth day there was no urinary output. Following immediate irrigation of the renal pelvis, at which time a considerable amount of crystallized sulfadiazine was encountered along the course of the ureters, the urinary output rapidly rose to 2000 cc. on the next day. The first specimen of urine obtained contained 390 mg. of sulfadiazine per 100 cc., 200 mg. being of the conjugated form. The blood concentration of the drug on the seventh day was 11.4 mg. per 100 cc. This patient made an uneventful recovery. These authors emphasize the importance of maintaining sufficient urinary output while

this drug is being administered, and think that the formation of crystals will occur as frequently with sulfadiazine as with sulfathiazole or sulfapyridine.

In regard to sulfaguanidine, Firor⁽¹⁰⁾ claims an impressive reduction in the number of bacteria in the stools in some of his patients with the use of this drug, while in others the number of coliform organisms is unaltered. In those cases in which the drug is effective, the bacterial count may be reduced from ten million to less than one thousand. This drug is given in 2 Gm. doses every four hours. It is more slowly and less completely absorbed from the gastro-intestinal tract than other sulfonamide compounds and there is a lower blood concentration. This is due primarily to the rapid elimination by the kidneys. In ulcerative carcinomatous lesions the drug has little or no effect on the number of bacteria in the stools, and in the presence of obstructive lesions it is definitely contraindicated. Here the compound remains in the small intestine. It is readily absorbed and has a marked toxic effect. This drug should not be given to patients with renal impairment, and a daily urinary output of 1500 cc. or more should be maintained.

Sulfasuxidine, a compound that has been more recently developed, promises to be of much greater value than sulfaguanidine, as it is far less toxic and much more constant in its action on coliform organisms.

Both of these compounds should lessen the hazard of infection in intestinal surgery. They are given over a period of three or four days prior to operation, during which time stool cultures should be closely followed. The blood concentration is never high, and with sulfasuxidine it averages between 3 and 4 mg. per 100 cc.

Summary

Sulfanilamide and its allied compounds are valuable adjuncts in surgery, and they have materially influenced the mortality as well as the morbidity in all fields of surgery. While the satisfactory results in chemotherapy are emphasized, all reports in the literature continue to stress the potential dangers associated with the use of sulfonamide compounds, and urge that caution be exercised in their administration.

8. Long, P. H.; Bliss, E. A.; and Ott, E.: Studies on Sulfadiazine. The Chemotherapy of Experimental Haemolytic Streptococcal, Pneumococcal, and Staphylococcal Infections in Mice, *Bull. Johns Hopkins Hosp.* 69:297 (October) 1941.

9. Thompson, C. J.; Herrell, W. E.; and Brown, A. E.: Anuria After Sulfadiazine Therapy, *Proc. Staff. Meet., Mayo Clin.* 10:609 (September) 1941.

10. Firor, W. M. and Jonas, A. F.: Use of Sulfanilylguanidine in Surgical Patients, *Ann. Surg.* 114:19 (July) 1941.

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A SPLENDID RECORD

The January number of *The Health Bulletin* announced that after nineteen years as its editor, Dr. George M. Cooper has been "granted a leave of absence for an indeterminate period." The reason given for this action is the increase in the other health activities for which he is responsible.

During these nineteen years Dr. Cooper's ability to think a problem through and to express his thoughts clearly has made *The Health Bulletin* one of the most widely read and widely quoted publications in its field. He has won and kept the confidence, the admiration and the affection of the doctors of North Carolina, whether in public health work or in private practice. We are glad that he is not to quit the State Health Department, in which he has done so much constructive work. It is appropriate, however, to say to him as he lays down the editorial pen, "Well done, thou good and faithful servant."

To Dr. John H. Hamilton, who is now

acting editor of *The Bulletin*, the NORTH CAROLINA MEDICAL JOURNAL extends best wishes, and congratulations upon his maiden effort.

* * * *

SOLVING PROBLEMS

In his excellent book, *THE THERAPY OF THE NEUROSES AND PSYCHOSES*, S. H. Kraines defines worry as "a state of anxiety about some particular problem". He offers some advice about solving a problem—advice so practical that, while intended for the neurotic individual, it is good enough for even the best balanced mind to follow. Four steps in reasoning out a problem are given. First, one "must train himself to state his problem clearly and definitely." Second, "after the facts have been ascertained and weighed, an analysis should be made of the best possible solution. . . . The best solution available should then be followed with an understanding of its values and inadequacies." Third, "Resign one's self to the difficulties of the 'best solution', until one can work out a better one. . . . Should the problem not require immediate solution, then one can continue to analyze it over a long period of time; but in such cases, continuous thought on the problem should be avoided, for continuous thought usually leads to a 'rut formation', and the person overlooks possible answers because of an accustomed pattern of thinking. One should therefore consciously allow himself only a certain portion of time in which to examine the problem, and at other times deliberately occupy himself with unrelated interests so that the problem may not intrude." Finally, "Having determined his course of action," one must "proceed to carry it through, even if it is distasteful. . . . It is far better to carry out that which is planned than to drift aimlessly in the sea of indecision."

These steps are all important, and follow in logical sequence. Perhaps the most important advice of all, however, is the caution against forming a rut by constantly thinking of the problem, instead of deliberately leaving it for long enough intervals to gain fresh viewpoints. This method of working out difficult problems is well worth trying, not only by patients, but by physicians and even by psychiatrists.

"SAYING A LOT AND ASSUMING A BIG RESPONSIBILITY"

Dr. Bill MacNider has often called to task a student who made a wild guess with the remark: "You are saying a lot and assuming a big responsibility." This phrase applies well to Dr. O. L. Murphy, of Simsbury, Connecticut, who in the *Journal of the American Medical Association* for January 12 writes: "Kindly advise our local civil defense council as to generalized typhoid inoculations among civilians. It is common knowledge that, throughout the South, typhoid fever is pandemic and primitive conditions exist. While it is true that all army men are inoculated against the typhoid group, is there any possibility of these men being carriers while on furlough at home here in the North? Does passive inoculation [immunization?—Ed.] prevent carriers?"

According to the latest edition of Webster's UNABRIDGED DICTIONARY, pandemic means "affecting the majority of people in a country or a number of countries; everywhere epidemic." It is granted that in some parts of the South "primitive conditions exist", just as they do in some parts of Connecticut and every other state; but to charge that typhoid fever is pandemic throughout the South is, indeed, "saying a lot and assuming a big responsibility."

The most cursory examination of the public health records should convince anyone who can think without perspiring that typhoid fever does not affect the majority of the population of the South. In North Carolina the younger generation of doctors are little better acquainted with typhoid fever than with yellow fever, for they rarely see a case. Dr. Murphy may be relieved to know that in the eight counties of North Carolina in which 250,000 soldiers maneuvered in October and November there was not a single case of typhoid fever and only one typhoid carrier. The carrier was closely guarded by military police during the maneuvers.

One of the greatest pleasures given the people of North Carolina during the period of maneuvers was that of entertaining in their homes numbers of the soldiers from Northern states. I trust that Dr. Murphy will talk to some of these young men personally and learn from them that we who live in the South are people; that not all Southern homes are primitive; and that the average Southerner is really a rather decent sort of fellow.

INSTRUMENTS FOR DEFENSE

A letter from Dr. R. G. Sowers of Sanford suggests that many doctors in North Carolina may have antiquated or worn out surgical instruments which would be valuable in the defense program. Although these instruments can no longer serve their original purpose of healing and conserving life, the steel they contain can be converted into efficient implements of death. Soon after this letter came, a newspaper article on the program for salvaging rubbish appeared, in which it was stated that metals of every kind are "topping the list of waste materials needed." This article warns, however, that nothing which can be used and would have to be replaced should be disposed of. Such articles "can serve the national interest better by being used for the purpose for which they were manufactured."

Officials of the salvage program recommend that citizens contribute their waste materials to the defense program through the junkman, either by selling them directly to him, or by giving them to charitable agencies which collect them and sell them to dealers. Among the agencies which perform this function are the Goodwill Industries, Salvation Army, Boy Scouts, Girl Scouts, American Legion, and Parent-Teacher Associations.

The nearly two thousand members of the Medical Society of the State of North Carolina could contribute a vast amount of the finest quality steel to national defense if each one would donate even *one* discarded and otherwise worthless instrument to this cause.

The Ruling Principle of the Physician.—Is my understanding sufficient for this or not? If it is sufficient, I use it for the work as an instrument given by the universal nature. But if it is not sufficient, then either I retire from the work and give way to him who is able to do it better, unless there be some reason why I ought not to do so; or I do it as well as I can, taking to help me the man who with the aid of my ruling principle can do what is now fit and useful for the general good. For whatsoever either by myself or with another I can do, ought to be directed to this only, to that which is useful and well suited to society. — Meditations of Marcus Aurelius.

DR. AUSTIN SPEAKS HIS MIND¹

Since Commodore Perry in 1853 brought back from the Orient three little carved monkeys, one with its eyes covered by its hands, one with its ears covered, and the third with its hands over its mouth, they have been symbolic of an idealistic type of individual who sees no evil, hears no evil and speaks no evil. But since "Jap" day, December 7, 1941, anyone of that type will be more apt to be classed as a dumbell who *sees nothin', hears nothin' and says nothin'*. I've tried for a month to use a pen filled with soft soap, so that I could put out a page of pusillanimous puerile platitudes placating present problems, but it hasn't worked. No one has stated as yet *that our boys were killed at Pearl Harbor by bombs made from the iron sold by United States junk dealers, or that our ships were sunk by planes driven by gasoline sold by United States oil companies, or that the Jap planes were made by machine tools sold by United States factories, or that many of these factories were built with money loaned by United States bankers.* Several years ago a friend of mine connected with a trust company in New York came back disappointed after six months in Japan, where he had gone to make a loan of two hundred million dollars. He was humiliated because they took only one hundred million and gave Germany and England each a chance to furnish half of the other hundred million. And our women folk have also had their part in this economic problem, *for every pair of silk stockings worn by the wives, mothers, sisters and sweethearts of our soldiers gave ten pounds of scrap iron to Japan to build ships and munitions.*

The medical profession of this country will have to have its own Pearl Harbor before it wakes up to the fact that politicians and their social service fifth columnists are ready and waiting for the chance to sabotage our profession. In the good old days when get-rich-quick promoters and fake stock salesmen took untold millions from doctors, the American Medical Association Directory was considered the greatest sucker list in

the country because *doctors seemed too busy to read, to think or to investigate before they made investments.* Just as illuminating have been three experiences at medical meetings recently. The first had thirteen members present out of the thirty-five in the society. During the business session a resolution passed by an adjoining county society was read which *condemned the Abell resolution* passed by the American Medical Association at their last session in Cleveland. This society then, without any discussion, voted to have their secretary draw up a similar set of resolutions and send them to the American Medical Association. One of the members then asked for my interpretation of the Abell resolution. Instead, I asked, "How many of you have read the Abell resolution?" Not a single member had read it or knew anything about it save what they had just heard. Then I asked, "What right have you to pass resolutions or condemn something you know nothing about?" They immediately voted to rescind their previous action and appointed a committee to study the Abell resolution and make a report at the next meeting. Another society with seventy-five members had fifty present at their dinner, but only twenty-five members stayed to hear the guest speaker explain the new Welfare Law. *Seven adjoining counties had been invited to send their welfare committees to this meeting, but not a single secretary answered the invitation.* After the speaker had finished, one man asked why the state organization did not sponsor some plan for the county societies. I took the floor and asked two questions, "How many of you have read the Abell resolution and know what the responsibilities are that the profession is facing in this war?" One man raised his hand. Next I asked, "How many of you have been reading in the state Journal and the Journal of the American Medical Association what has been written about the new Welfare Law?" Not a single hand was raised. So the only thing one can say is that it is a waste of time for any state organization to read and think for its members when they will not use their own time and brains to read and think for themselves.

"That truth should be silent I had almost forgot." (Antony and Cleopatra, Act II, Scene 2.)

1. M. A. Austin: President's Page, J. Indiana State M. Assoc., 35:91 (February) 1942.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE

An 18 year old colored boy was admitted to Vanderbilt University Hospital⁽¹⁾ on June 2, 1937, complaining of weakness and shortness of breath. The patient was perfectly well until six weeks before admission, when he first noted dyspnea on exertion, marked weakness and fatigability. He was forced to give up his job as a waiter because of the weakness, which gradually became worse. Two weeks before admission he began to have frequency of urination, with some burning and nocturia three to four times. During the week before admission he noted slight edema of his ankles, a cough which was worse at night and was productive of a small amount of mucoid sputum, and some orthopnea. He had had no pleurisy, hemoptysis, or night sweats, and he did not believe he had had a fever.

The past history and family history were non-contributory.

Upon physical examination the temperature was found to be 99.2 F., the respirations 48, and the pulse 142. The blood pressure was 140 systolic, 110 diastolic. The patient was a fairly well developed and well nourished colored male having acute respiratory distress and sitting straight up in bed. Examination of the eyes was essentially negative, and the fundi were normal. The ears, nose and mouth were normal. The neck vessels were moderately distended, but the thyroid was not enlarged.

The percussion note was impaired at both lung bases posteriorly. Breath sounds were harsh throughout and expiration was prolonged. There were numerous moist rales to the level of both scapulae. No friction rub was heard. The heart was enlarged. The point of maximum impulse was in the sixth interspace in the anterior axillary line. Cardiac dullness was difficult to determine by percussion but was 5½ cm. on the right and 12 cm. on the left of the midsternum at the sixth interspace. The rate was rapid and regular. The second pulmonic sound was

markedly accentuated and was reduplicated; it became practically inaudible during respiration. There was a gallop rhythm. No murmurs could be made out.

The liver was felt three finger breadths below the costal margin. The spleen was not felt, and there was no tenderness or free fluid in the abdomen.

There was a slight pitting edema of the legs. The reflexes were physiological. Rectal examination was negative.

Laboratory findings: The urine showed a trace of albumin, occasional clumps of white cells, and one to two red cells per high power field, with many granular casts. The red cell count was 3,400,000, with 11 Gm. of hemoglobin. The white cell count was 6800. Wassermann and Kahn tests were positive. The nonprotein nitrogen was 32 mg. per 100 cc.; the blood sugar 87 mg. per 100 cc. The serum proteins were normal; the phenolsulfonphthalein test was 85 per cent, and the Fishberg concentration test showed a specific gravity of 1.016. Four sputum specimens were negative for acid-fast bacilli. Sputum culture showed *Staphylococcus aureus*.

Electrocardiograms were made over the period of his stay in the hospital. These showed marked changes from record to record. The last record, taken the day of his death, was interpreted as showing a shifting pacemaker in the bundle of His, recurring in variable and bizarre complexes.

An x-ray of the chest gave the following findings: "The heart is a little large, probably due to pericardial effusion. There is marked thickening of the hilus on both sides with heavy infiltration from the hilus toward the periphery and bases. There is considerable exudation on both sides and beginning extension into the apices."

Course in the Hospital: Following admission the patient's blood pressure ranged within normal limits. The patient was digitalized, 350 cc. of blood was withdrawn, and he was given diuretics. On this regimen he improved somewhat. However, he had a low-grade fever and a moderate tachycardia out of proportion to the temperature during his whole stay in the hospital. One week after admission the physical findings in his chest had practically disappeared, although in almost all subsequent examinations moist rales were heard at both bases. Rapid changes took place in the x-ray findings in the chest.

1. We are indebted to Dr. James Dawson of the School of Medicine of Vanderbilt University for the clinical record and specimens.

Four days after the first plate was made marked infiltration surrounding the heart in both pulmonic fields, suggesting miliary tuberculosis, was recorded. Three days later the patient was examined by fluoroscope and it was noted that cardiac pulsations were slight. At this time it was felt that changes in the chest might be due to passive congestion. A week later definite enlargement of the right side of the heart and some increase in the infiltration in the chest were noted by x-ray. Two weeks after this an x-ray picture showed that the lower two thirds of both lung fields were extensively involved, completely obliterating the cardiac shadow.

Venous pressure the day after admission was 205 mm. of saline. This examination was not repeated. Tuberculin tests were given, and these were all negative. One month after admission, the day before the patient's death, it was noted that he appeared practically as he had on admission. He had predominant left-sided heart failure which had never been satisfactorily controlled with the usual therapeutic measures. He looked very ill and had marked dyspnea and orthopnea and slight cyanosis of the nail beds. Moist rales were present in the lower two thirds of his chest on both sides, and the superficial vessels were only slightly distended. He had a precordial heave which was most marked in the fifth and sixth interspaces just outside the midclavicular line. Cardiac dullness was definitely increased both to the right and to the left. The heart rate was rapid and the sounds had a tic-tac quality. The pulmonic second sound was greater than the aortic second sound, but was not markedly accentuated. No murmurs could be heard. During his stay in the hospital albumin, red cells, and casts had been found in some urine specimens and not in others. The nonprotein nitrogen was 30 mg. per 100 cc. the day before death. The following day the patient's pulse became markedly irregular; more rales appeared in the chest, the blood pressure was unobtainable, and the patient expired.

Discussion

DR. TINSLEY R. HARRISON: Two points seem clear from this record. The first is that the patient died of progressive congestive heart failure; and the second is that the patient had something wrong other than

cardiac disease. The prominence of weakness as an early symptom is not usually seen in patients with disease limited to the heart. Such patients complain of shortness of breath but do not have marked weakness, ordinarily. The presence of a low-grade fever confirms the suspicion that the patient probably had some systemic disease and that the cardiac disorder was only one part of the picture. The urinary findings are compatible with a chronic glomerular nephritis, but can be accounted for on the basis of renal congestion. If we assume that the patient had some systemic disease, which seems highly probable, then the likely thing at his age is that this disorder was of an infectious nature. Our problem, then, is to determine what infectious diseases can cause, in a boy of 18, progressive heart failure, enlargement of the hilus lymph nodes (for I interpret the x-ray to mean that these nodes are enlarged), and rapid changes in the appearance of the lungs radiologically.

The first thing which comes to mind is that this boy might have rheumatic heart disease, as this is the most common infectious disease to cause myocardial failure, and is especially common at this age. Against this diagnosis are the following features: The absence of leukocytosis, the absence of murmurs after the disease had endured for three months, the onset in the summer, and the great rarity of lymph node enlargement in rheumatic fever. Of these points, the most important, I believe, is the absence of heart murmurs, which would indicate that there was no endocardial disease. This certainly is strong evidence against rheumatic heart disease of three months' duration and of sufficient severity to cause death.

The second diagnosis which comes to mind is tuberculosis of the pericardium with extension to the myocardium, a disease in keeping with his age and race. It could account for the low-grade fever, weakness and the enlarged lymph nodes. However, there are certain features against this diagnosis. Tuberculosis, when it affects the heart, involves the pericardium primarily and the myocardium only secondarily. With pericardial tuberculosis of the so-called constrictive type, which is the usual form, one almost always has a paradoxical pulse—that is, the blood pressure is lower during inspiration than during expiration. No mention of such condition is made in the records. In the next

place, a gallop rhythm, which is a sign of dilatation of the myocardium, occurs very rarely or never in patients with constrictive tuberculous pericarditis. The findings in the roentgen examination of the lungs are compatible with tuberculosis, but certainly are not typical. The electrocardiographic findings are not those usually seen in constrictive pericarditis. In this condition one usually has inversion of the T-waves in the three standard leads, with low voltage of the QRS complex in all the leads. This patient's electrocardiographic pictures were quite different and changed markedly from time to time, suggesting an active, acute or subacute process in the myocardium.

One has to consider rather seriously syphilitic myocarditis. This is a rare disease, but in favor of it are the positive Wassermann and Kahn reactions. In my experience myocardial syphilis is always associated with syphilitic aortitis, although not necessarily with insufficiency of the aortic valves. There was apparently no evidence of aortitis in the x-ray pictures, but it is possible that it was missed. The thing which is most against syphilitic myocarditis is the patient's age. The few patients with this condition which I have seen have been decidedly older than this boy was at the time of his death. Furthermore, it is rather difficult to explain the x-ray findings in the lungs on the basis of syphilis.

If we pass from common infections to those which are quite rare, we have to think of a group of disorders of unknown etiology, including the various types of multiple arteritis. Under this grouping we may include periarteritis nodosa, lupus erythematosus disseminatus, and various forms of atypical arteritis. The patient lacked skin lesions, he lacked abdominal pain, and he lacked leukocytosis, which is commonly found in periarteritis, and leukopenia, observed in disseminated lupus. However, either of these conditions may give changes in the lungs and may produce subacute myocarditis. The endocardium is usually involved (so-called Libman-Sachs atypical verrucous endocarditis), but the involvement is usually not marked enough to produce murmurs. Nephritis is the rule in the various types of arteritis, and this patient had suggestive evidence of nephritis. It would seem that a diagnosis of one of these conditions has to be considered very seriously.

Another type of disease, presumably infectious in nature, although the etiology is not known, which might conceivably be concerned here is Boeck's sarcoid. This comes to mind immediately on reading the description of the x-ray findings in the lungs. Perhaps the single most characteristic feature of sarcoidosis is enlargement of the hilus nodes, with infiltration extending out from the hilus into the lungs. The radiological findings in the patient's lungs are quite compatible with this disease. Although involvement of the myocardium to a degree sufficient to cause heart failure seems to be very rare, there have been one or two cases reported. However, the points which are against sarcoid disease in this patient are the following: He lacks skin lesions, he does not have general glandular enlargement, the liver and spleen are not enlarged, and the serum proteins are normal. In the half dozen or more cases of sarcoid infection which I have seen, one or more of the features which this patient lacks was present. In their absence I do not believe one can justifiably make a diagnosis of myocardial and pulmonary sarcoidosis.

Another infection which may cause heart failure in young people is diphtheria. However, in diphtheria the picture is much more acute and usually death or recovery supervenes within a week or so. The three months' duration of cardiac symptoms makes this diagnosis extremely unlikely. Furthermore, we have no history to point toward diphtheria.

In view of the atypical features which have been mentioned, it is difficult to fit this case into any of the infectious diseases which affect the heart. One therefore has to think of other types of disease. There are rare instances of primary cardiac tumor, and, of course, cases of lymphomatous disease of the mediastinal nodes are common. Occasionally the heart may be invaded in such instances. However, I do not see how we can make a diagnosis of tumor of the heart, and the absence of lymph node involvement, except in the mediastinum, makes lymphoma very unlikely.

I have seen a patient with myocardial amyloidosis presenting a picture something like this, but in the absence of hepatic enlargement, splenic enlargement, and a nephrotic picture, I hesitate to make this diagnosis.

In any patient with unexplained heart

failure, beriberi must be considered. This patient lacks any evidence of peripheral neuritis. We do not know whether his diet was inadequate before coming to the hospital, but we can be quite sure that he was given a decent diet after he came to the hospital, and in spite of this he died. This would seem to me to make beriberi heart extremely improbable.

The more I reason about this case the more confused I become. I think that one can make a diagnosis of subacute myocarditis. As regards the etiologic basis for this lesion I am certainly very much at sea. I do not believe it is rheumatic, tuberculous or syphilitic for the reasons mentioned; and more or less by exclusion I am inclined to guess that this patient had one of the forms of arteritis, most likely the type which we refer to as Libman-Sachs disease, or as the internal form of disseminated lupus.

DR. GEORGE HARRELL: The x-ray findings which resemble miliary tuberculosis in the presence of a negative tuberculin test, and the clinical picture of dyspnea and weakness with little fever are perfectly compatible with a diagnosis of Boeck's sarcoid. One case of massive involvement of the myocardium has been reported in the literature. The normal serum proteins are not the usual finding, but chemical studies have been done only on chronic cases, and the disease in this man ran an acute course, which may not have allowed time for the development of typical chemical changes. The hypertension might have been caused by massive infiltration of the kidney by sarcoid.

Dr. Harrison's Diagnosis

Internal form of disseminated lupus.

Dr. Harrell's Diagnosis

Boeck's sarcoid in an acute form.

Anatomical Diagnosis

Boeck's sarcoid in an acute form.

Anatomical Report

DR. ROBERT P. MOREHEAD: Study of the autopsy material reveals a widespread disease process characterized by extensive infiltration of an opaque yellowish-gray tissue into the lymph nodes, lung, heart, and liver.

Progressive congestive heart failure, as displayed by this patient, is easily explained by the cardiac and pulmonary findings. The heart weighed 430 Gm. and both ventricles were the sites of extensive infiltrations in-

volving all components of the heart wall and resulting in muscle destruction and mural thrombosis. The lung showed extensive infiltrations which were most pronounced beneath the pleura. The right and left lungs weighed 720 and 600 Gm. respectively. The peribronchial lymph nodes were greatly enlarged and showed abundant infiltrations.

The hepatic lesions were small and numerous. Two large friable yellowish infarcts were present in the left kidney and were incompletely surrounded by a hemorrhagic zone.

Microscopic examination revealed the infiltrating tissue to be everywhere uniform in appearance, and to consist of chronic inflammatory granulations with a strong tendency toward tubercle formation. The tubercle-like masses were not unlike those seen in tuberculosis and were composed of epithelioid cells with an abundant scattering of giant cells. Small areas of necrosis were seen, and in many instances the necrotic areas were large and confluent. Pronounced limiting zones of lymphocytes were not seen, and there was no evidence of peripheral hyalinization.

Other microscopic findings of interest were capsular proliferation and imperfect crescent formation in the kidneys, explaining in part the urinary findings, and cytological necrosis confirming the impression of gross renal infarction.

Attempts to demonstrate acid-fast organisms in all tissues gave negative results.

I am of the opinion that this patient suffered from a rather acute form of Boeck's sarcoid. From a pathological viewpoint, the most pronounced objection to this diagnosis is the rather wide-spread necrosis which is usually absent in the lesions of sarcoid. This can conceivably be explained on the basis of the rapidity of the process.

Aside from the very rapid course of the disease in this patient, the cardiac findings are outstanding. In the reported cases of Boeck's sarcoid little mention has been made of cardiac lesions. Bernstein, Konzelmann and Sidlick reported a case of Boeck's sarcoid in which the lesions were located in the epicardium along the course of the coronary vessels. Similar lesions were noted by Schumann, Longcope and Pierson. The only reported case with actual involvement of the myocardium is that reported by Nickerson. In his case the myocardial involvement was not pronounced.

CLINICO-PATHOLOGICAL
CONFERENCECITY MEMORIAL HOSPITAL
WINSTON-SALEM

H. E., a 15 year old boy, was admitted to the hospital on February 6, 1941, with the chief complaint of a breaking out on the legs.

The *present illness* began three days before admission with the appearance of small hemorrhagic spots on both legs. These were not sore and did not disappear with pressure. The spots gradually enlarged and his legs became sore to touch and painful upon standing. His ankles and feet began to swell. Associated with these symptoms there had been a loss of energy and appetite and a moderate feeling of malaise.

The *past history* revealed the usual childhood diseases. The patient had been wetting the bed since childhood, but had had no burning on urination or visible blood in the urine.

On *physical examination* the child was found to be fairly well developed and well nourished. He appeared rather unintelligent and was squirming around in bed. The eyes showed no conjunctival hemorrhages and the pupils reacted to light and accommodation. The ears and throat were normal. The lungs were clear. The heart was normal in size and shape and was free of murmurs. The liver and spleen were not palpable and no fluid could be detected in the abdomen. The abdomen was soft. There was a slight swelling of the feet and ankles, and the skin over the legs was discolored by numerous hemorrhagic spots varying in size from a pin-head to a dime. These did not disappear on pressure. Elsewhere the skin was normal. His urine showed a 3 plus reaction for albumin, a specific gravity of 1.026, 3 to 5 white blood cells per high power field, and an occasional epithelial cell. His red blood cell count was 4,162,000, the white cell count 7,300, the hemoglobin 12½ Gm., and the differential count normal with 62 per cent segmented cells and 8 per cent stabs. The nonprotein nitrogen the day after admission was 30.9 mg. per 100 cc. and the Kline test was negative. The platelet count on February 3 was 275,000 and the clotting time was three minutes. The temperature and pulse were normal.

Course in the Hospital: By February 8 the hemorrhagic lesions on the lower extremities had disappeared and the patient was discharged at 10:30 a.m. At 7:15 p.m. he came back to the hospital, stating that during the day at home he had walked and that in the evening many painful red spots had appeared on the lower extremities. He was re-admitted. Two days later he was started on a high vitamin diet, with tomato and orange juice and raw cabbage daily. On February 12 his blood calcium was 16 mg. per 100 cc. and his nonprotein nitrogen was 36 mg. per 100 cc. Following this the hemorrhagic lesions disappeared. On February 17 his abdomen was sore and rigid and he complained of some pain. Some blood was found in the stool and in the urine, and the tourniquet test was positive. As a result of these findings 250 cc. of blood was given. On February 18 the patient had no appetite and complained of some nausea. His gums and lips were red but not bleeding. Another 200 cc. of blood was given. On February 19 and 20 250 cc. more of blood was given. On February 24 the patient again had hemorrhagic spots and his hands were swollen. His blood count on February 21 showed 5,575,000 red cells, 13 Gm. of hemoglobin, and 18,000 white cells, with 15 per cent stabs and 65 per cent segmented cells. His urine on February 24 showed a specific gravity of 1.008 and was red, turbid and acid. The reaction for albumin was 4 plus and there were 10 to 12 white blood cells per high power field, 8 to 10 red blood cells per high power field, and many granular casts. His white cell count was 26,150, with 75 per cent segmented cells and 10 per cent stabs. He was given frequent transfusions of 250 cc. of whole blood, and vitamin K was started on March 1.

On March 4 swelling of the neck and fluid in the abdomen appeared, and the patient groaned continually with pain. On March 7 his red cell count was 4,000,000, with 12 Gm. of hemoglobin; his white cell count 18,300 with 3 per cent juveniles, 16 per cent stabs, and 36 per cent segmented cells. His urine showed a 3 plus reaction for albumin and a 4 plus reaction for blood, with a specific gravity of 1.010 and numerous hyalin and granular casts. The total blood protein was 3.5 Gm. and the platelet count was 75,000. His blood pressure on March 9 was 130 systolic, 100 diastolic. The clot retraction time was normal and the blood smear showed

considerable toxic granulation of the polymorphonuclear leukocytes. The number of platelets in the smear did not appear to be reduced. On March 11 his general condition was recorded as satisfactory except that he still had swelling of the neck. His rash was not as pronounced. On March 14 the patient was started on x-ray therapy for parotitis. On March 20 the parotitis subsided and the patient's condition appeared to be improving. He had been running a fever varying between 100 and 101 F. for about three weeks at the time x-ray therapy was started. This gradually came down during the following week. On March 24 the patient began to have some diarrhea and was given paregoric, bismuth and salol, which controlled it. On March 27 and 30 the patient seemed to be much improved; the parotitis had cleared up and the purpuric spots were gone. On April 5 the patient was allowed to go home.

Later that night he was brought back to the hospital with a history of having had a large gastric hemorrhage. He continued to bleed after admission. According to the nurse's notes this hemorrhage was apparently red frothy material that the patient brought up in considerable amounts all night, although it is impossible to determine from the chart whether this was actually blood or frothy, blood-tinged fluid. There is no note of any physical examination of the patient at this time, and any abnormal findings in his lungs, if present, were not noted on the chart. The patient became gradually weaker, his pulse became fast and thready, and he expired in the morning.

Discussion

DR. WINGATE JOHNSON: In this case it is apparent that the patient had some condition that caused hemorrhages under the skin and into the mucous membranes of the upper digestive tract. The hemorrhagic nephritis might have been caused by hemorrhages into the kidneys, also.

The diseases that are most apt to cause such hemorrhages are the leukemias, hemophilia, and purpura hemorrhagica. The blood picture certainly is not that of a leukemia, and I believe that can be ruled out to begin with. The normal clotting time is enough to rule out hemophilia. The absence of an enlarged spleen or liver is against Gaucher's or Banti's disease.

Of the purpuras there are two main types: thrombocytopenic and non-thrombocytopenic. Thrombocytopenic purpura, as its name indicates, is characterized by a marked reduction of blood platelets, which in turn prolongs the bleeding time and the clot retraction time. Since the platelet count was within normal limits—except for one doubtful count—I believe we can rule out this type of purpura. The tourniquet test is positive in both types.

In non-thrombocytopenic purpura the hemorrhages are produced by increased permeability of the capillaries. This increased permeability is supposedly due to some form of allergic or "anaphylactoid" reaction. The platelet count, the clotting time and the clot retraction time are all within normal limits. Painful joints are frequently associated with this type, and the name Schoenlein's disease or purpura rheumatica is given to the cases in which joint pains predominate. Abdominal pain is also common in non-thrombocytopenic purpura, and cases in which it is most noticeable are called Henoch's purpura.

The hemorrhages from the stomach and bowels, and possibly from the lungs, could have been due to this condition, as could the urinary findings. The leukocytosis could have been accounted for by the inflammatory reaction stimulated by the subcutaneous hemorrhages.

The chief point against the diagnosis of non-thrombocytopenic purpura is that it is rarely fatal; however, fatal cases have been reported. My diagnosis is non-thrombocytopenic purpura.

DR. GRIMES: Is not the blood pressure of 130 systolic, 100 diastolic high for that condition?

DR. JOHNSON: I don't think so, in view of the fact that the patient had an acute nephritis. The nephritis was probably secondary to the hemorrhage in the kidneys.

DR. WOLFE: We can rule out Gaucher's disease because anemia is usually present with it.

DR. GRIMES: How about Banti's disease?

DR. STREET: The blood vessels would have been enlarged and there would have been portal thrombosis in that case.

Clinical Diagnosis

1. Vitamin C deficiency.
2. Hemophilia.

Dr. Johnson's Diagnosis

Non-thrombocytopenic purpura.

Anatomical Diagnosis

Arthritic purpura.
Acute pulmonary edema.
Acute focal glomerular nephritis.
Splenomegaly.
Hepatomegaly.
Cardiac hypertrophy and dilatation.
Ascites.

Anatomical Report

DR. T. T. FROST: On opening the body we found a liter of blood-tinged fluid in the abdominal cavity and a severe acute pulmonary edema, which was obviously responsible for the patient's death. The most interesting findings were in the kidneys. These were large and weighed 490 Gm. together, almost 200 Gm. more than they should have weighed. They were enlarged and pale and the external surfaces and the cortical portion of the cut surface showed numerous closely placed petechiae. The kidneys were quite similar to the so-called "flea bitten" kidneys which are found in sub-acute bacterial endocarditis. The microscopic appearance of the kidney showed the picture which was predicted by the gross appearance—namely, a focal glomerular nephritis which was widespread and involved a large number of the glomeruli. Many of the capillary loops of the glomerular tufts were obstructed by thrombi and many of them showed considerable fibrous thickening of portions of the glomerular tufts. Occasionally the entire glomerulus was replaced by fibrous tissue. The heart showed no endocarditis or mural thrombosis. It was normal except for dilatation of the right side. The liver showed simple cloudy swelling and the enlargement of the spleen was of the type usually found in toxic states. There were no lesions in the gastro-intestinal tract to explain the bleeding which occurred during life. The first edition of Osler's *Practice of Medicine* classes his disease as a type of arthritic purpura, and he separates it from other types because of the presence of marked gastro-intestinal and renal symptoms.

The lesions found generally in patients dying of purpura are insignificant and coincidental findings. The finding of the renal lesions in this case gives it special interest.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Dead Bodies: Coroner and physicians performing unauthorized autopsy may be held liable for wrongful mutilation.

Within recent years the laws governing autopsies in this state have been liberalized to a certain extent, but the provisions for obtaining authority to perform postmortem examinations are still very strict, and it is incumbent upon physicians and others having any connection whatsoever with autopsies to be well posted as to the legal requirements. According to the records of the following case it seems that the physicians involved had no reason to suspect that the coroner was not within his rights in requesting and directing them to perform the autopsy, and it is certain that they performed their duties in this respect in good faith.

The action in question was instituted to recover damages for the mutilation of the dead body of the plaintiff's son by an unauthorized autopsy. The county coroner, three physicians, and an incorporated funeral home were joined as parties defendant. The Superior Court at the close of the plaintiff's evidence entered judgment of nonsuit as to all defendants, and the plaintiff appealed. It appeared from the evidence offered by the plaintiff that the body of his son (a minor) was found in the Y. M. C. A. swimming pool in a certain city. The plaintiff lived in another city and none of the next of kin lived in the county where the death occurred. The coroner was called in, and, finding no water in the lungs and the neck unbroken, he had the body removed to the funeral home of one of the defendants, and called in three physicians to perform an autopsy to determine the cause of death. The autopsy revealed that death was due to a heart attack. It was testified that the coroner had said he had the autopsy performed to determine the cause of death; that he had no suspicion of foul play; and that no inquest was held. The physicians admitted that they were requested to perform the autopsy "for the purpose of determining the cause of death." It was also admitted that no permission was asked or obtained from the father of the deceased nor from any of his kin. The father testified that he would not have given consent if it had been requested. He further testified that knowledge of the autopsy performed on the body of his son shocked and unnerved him as much as the news of his death. There was no evidence that the defendant funeral home offered objection to the autopsy, or did anything to prevent it.

According to Consolidated Statutes 1020 it is apparent that no authority is given the coroner in cases where he does not suspect foul play and where no inquest is held or jury summoned, upon his own initiative to cause an autopsy to be performed merely to ascertain the cause of death. This statute authorizes an investigation "whenever it appears that the deceased probably came to his death by the criminal act or default of some person," and in such a case empowers the coroner "to summon a physician or surgeon and to cause him to make such examination as may be necessary whenever it appears to such coroner as proper to have such examination made." There is also a provision in the law empowering a prosecuting officer to order a postmortem examination in cases of homicide. Michies N. C. Code, section 5003 (1), states that "The right to perform an autopsy upon the dead body of a human being shall be limited to cases specially provided by statute or by direction or

will of the deceased; cases where a coroner or the majority of a coroner's jury deem it necessary upon an inquest to have such an autopsy; and cases where the husband or wife or one of the next of kin or nearest known relative or other person charged by law with the duty of burial, in the order named and as known shall authorize such examination or autopsy."

According to the above law, if foul play is not suspected the coroner has no right to order an autopsy. The coroner in this case went outside the scope of his authority; therefore he was not protected. The physician defendants were also unprotected, as the coroner was not authorized to order an autopsy and there was no consent from the next of kin. The funeral home, although it offered no objection to the postmortem examination's being performed in their place of business was found not culpable. It should be mentioned that testimony showed that the autopsy was carefully done and that there was no mutilation of the body, except a 16 inch incision—no more than would be necessary for embalming—and this incision did not show when the body was dressed for burial. The Supreme Court affirmed the finding of nonsuit as to the funeral home, but reversed the decision of the Superior Court as to the coroner and the three physicians. (Vol. 213, p. 613, North Carolina Supreme Court. Decision rendered spring term, 1938.)

MILITARY MEDICINE

TELEGRAM FROM DR. OLIN WEST

I have been officially informed that because of constantly increasing demands on the Procurement and Assignment Service in Washington and because of the growing needs of the army and navy for personnel it has become necessary for a new form to replace the form that recently appeared in the *Journal of the American Medical Association* and that it is expected that the new form will be ready for release within the very near future. It is therefore requested that the form which appeared in the *American Medical Association Journal* and which was reproduced by official agencies of state associations in a number of states be discontinued. It is my understanding that complete information concerning the new form will soon be available. An expression of grateful appreciation of the splendid cooperation and helpful kindnesses of state and county committees and state secretaries is hereby extended in behalf of the American Medical Association and its committee on medical preparedness. The executive officer of the Procurement and Assignment Service has today expressed to me similar appreciation on behalf of his office and of the Procurement and Assignment Service.

OLIN WEST.

January 6, 1942.

Dr. Wingate Johnson, Editor
NORTH CAROLINA MEDICAL JOURNAL,
Winston-Salem, N. C.

Dear Dr. Johnson:

We are all the way in the war. The war can be won by our united efforts. We must prepare for all emergencies. Medical preparedness is an essential part of our defense. Your State Medical Society has a preparedness committee composed of Dr. Carl Reynolds, State Health Officer, Dr. Donnell Cobb, President-Elect of the State Medical Society, and Dr. H. B. Haywood, Past-President of the State Medical Society.

New methods and new treatments are being used for war casualties. We ask that every County Society put on a program of instruction for all its members on the newer methods of treating war wounds or bomb wounds, gas and other war casualties. Your State Committee will gladly cooperate with you in securing informed instructors to help put on this program if you desire it.

In England over 50 per cent of the bombs dropped by German air raiders fell in rural communities. We therefore suggest that facilities for the location of emergency hospitals in your county be investigated and skeleton staffs be organized.

We urge this as the medical profession's contribution to our State of North Carolina.

Very truly yours,

HUBERT B. HAYWOOD, M.D., *Chairman*
Committee on Medical Preparedness
CARL V. REYNOLDS, M.D.
DONNELL B. COBB, M.D.

RECOMMENDATIONS TO ALL PHYSICIANS WITH REFERENCE TO THE NATIONAL EMERGENCY

I. Medical Students

A. All students holding letters of acceptance from the Dean for admission to medical college and freshmen and sophomores of good academic standing in medical colleges should present letters or have letters presented for them by their dean to their local boards of the Selective Service System. This step is necessary in order to be considered for deferment in Class II-A as a medical student. If local boards classify such students in Class I-A, they should immediately notify the deans and if necessary exercise their rights of appeal to the Board of Appeals. If, after exhausting such rights of appeal, further consideration necessary, request for further appeal may be made to the State Director and if necessary to the National Director of the Selective Service System. These officers have the power to take appeals to the President.

B. Those junior and senior students who are disqualified physically for commissions are to be recommended for deferment to local boards by their deans. These students should enroll with the Procurement and Assignment Service for other assignment.

C. All junior and senior students in good standing in medical schools, who have not done so, should apply immediately for commission in the Army or the Navy. This commission is in the grade of Second Lieutenant, Medical Administrative Corps of the Army of the United States, or Ensign H. V. (P) of the United States Navy Reserve, the choice as to Army or Navy being entirely voluntary. Applications for commission in the Army should be made to the Corps Area Surgeon of the Corps Area in which the applicant resides and applications for commission in the Navy should be made to the Commandant of the Naval District in which the applicant resides. Medical R. O. T. C. students should continue as before with a view of obtaining commissions as First Lieutenants, Medical Corps, upon graduation. Students who hold commissions, while the commissions are in force, come under the jurisdiction of the Army and Navy authorities and are not subject to induction under the Selective Service Act. The Army and Navy authorities will defer calling these officers to active duty until they have completed their medical education and at least 12 months of internship.

II. Recent Graduates

Upon successful completion of the medical college course, every individual holding commission as a Second Lieutenant, Medical Administrative Corps, Army of the United States, should make immediate application to the Adjutant General, United States Army, Washington, D. C., for appointment as First Lieutenant, Medical Corps, Army of the United States. Every individual holding commission as Ensign H. V. (P), U. S. Navy Reserve, should make immediate application to the Commandant of his Naval District for commission as Lieutenant (J. G.) Medical Corps Reserve, U. S. Navy. If appointment is desired in the grade of Lieutenant, (J. G.) in the regular Medical Corps of the U. S. Navy, application should be made to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Graduates who have failed to obtain a Medical Administrative Corps or Ensign Commission run the risk of being inducted into the military service as enlisted men under the provisions of the Selective Service Acts.

III. Twelve Months Interns

All interns should apply for a commission as First Lieutenant, Medical Corps, Army of the United States, or as Lieutenant (J. G.), United States Navy or Navy Reserve. Upon completion of 12 months internship, except in rare instances where the necessity of continuation as a member of the staff or as a resident can be defended by the institution, all who are physically fit may be required to enter military service. Those commissioned may then expect to enter military service in their professional capacity as medical officers; those who failed to apply for commission are liable for military service under the Selective Service Acts.

IV. Hospital Staff Members

Interns with more than 12 months of internship, assistant residents, fellows, residents, junior staff

members, and staff members under the age of 45, fall within the provisions of the Selective Service Acts which provide that all men between the ages of 20 and 45 are liable for military service. All such men holding Army commissions are subject to call at any time and only temporary deferment is possible, upon approval of the application made by the institution to the Adjutant General of the United States Army certifying that the individual is temporarily indispensable. All such men holding Naval Reserve commissions are subject to call at any time at the discretion of the Secretary of the Navy. Temporary deferments may be granted only upon approval of applications made to the Surgeon General of the Navy.

All men in this category who do not hold commissions should enroll with the Procurement and Assignment Service. The Procurement and Assignment Service under the Executive Order of the President is charged with the proper distribution of medical personnel for military, governmental, industrial, and civil agencies of the entire country. All those so enrolled whose services have not been established as essential in their present capacities will be certified as available to the Army, Navy, governmental, industrial, or civil agencies requiring their services for the duration of the war.

V. All Physicians Under Forty-five

All male physicians in this category are liable for military service and those who do not hold commissions are subject to induction under the Selective Service Acts. In order that their service may be utilized in a professional capacity as medical officers, they should be made available for service when needed. Wherever possible, their present positions in civil life should be filled or provisions made for filling their positions, by those who are (a) over 45, (b) physicians under 45 who are physically disqualified for military service, (c) women physicians, and (d) instructors and those engaged in research who do not possess an M.D. degree whose utilization would make available a physician for military service.

Every physician in this age group will be asked to enroll at an early date with the Procurement and Assignment Service. He will be certified for a position commensurate with his professional training and experience as requisitions are placed with the Procurement and Assignment Service by military, governmental, industrial or civil agencies requiring the assistance of those who must be relocated for the duration of the national emergency.

VI. All Physicians Over Forty-five

All physicians over 45 will be asked to enroll with the Procurement and Assignment Service at an early date. Those who are essential in their present capacities will be retained and those who are available for assignment to military, governmental, industrial or civil agencies may be asked by the Procurement and Assignment Service to serve those Agencies.

The maximal age for original appointment in the Army of the United States is 55. The maximal age for original appointment in the Naval Reserve is 50 years of age.

* * *

All inquiries concerning The Procurement and Assignment Service should be sent to The Executive Officer, 5654 Social Security Building, 4th and Independence Avenues, SW, Washington, D. C., and not to individual members of the Directing Board or of committees thereof.

The following letter was sent to the councillor of each medical district and to the secretaries of county societies.

Dear Doctor:

The problem of mental disorder appears to be growing. Competent authorities estimate that about 750,000 nervous breakdowns occur in the United States each year and about 100,000 of these are committed to mental hospitals. There are 500,000 patients in mental hospitals today. A total of 3,926 patients were admitted to the three State Hospitals of North Carolina in the last Biennium. In addition there is a great number of Mental Defectives, and Juvenile Delinquency seems to be on the increase; 600,000 boys and girls appeared before courts in the United States last year.

All this is of great concern to the "Medical Profession. Physicians are frequently called upon to diagnose, advise, give evidence, treat in this field. The war, involving millions of young men and their families and in some measure every man, woman and child, will have intense bearing on the mental health of the nation. No less so will the transition to peace-time adjustment when the war is won. It would therefore seem desirable that physicians should keep themselves as well informed as possible in the field of psychiatry which is a medical specialty, and in allied fields of mental study.

We would like to suggest that you advise the county or district medical societies in your district of the desirability of having a program once a year centering about the general field of psychiatry. Speakers could no doubt be secured from State Hospital Staffs, the Psychiatric Departments of Duke University Medical School and Bowman Gray Medical School, the Division of Mental Hygiene of the State Board of Public Welfare, the Army psychiatrists at Fort Bragg and psychiatrists in private practice. We should be glad to be informed of any activities of this kind in your district that we may report them to the annual meeting of the State Society.

Cordially yours,

JAMES W. VERNON, M.D., Chairman

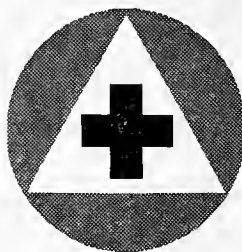
E. A. MacMILLAN, M.D.

JAMES WATSON, M.D.

Committee on Mental Hygiene of
the North Carolina Medical Society.

OFFICE OF CIVILIAN DEFENSE

President Roosevelt has appointed Dr. George Baehr, Chief Medical Officer of the Office of Civilian Defense, to be a member of the Health and Medical Committee of the Office of Defense Health and Welfare Services. Dr. Irvin Abell, Louisville, Kentucky, chairman of the Committee on Medical Preparedness of the American Medical Association, is chairman of the Health and Medical Committee and other members are the Surgeon General of the U. S. Army, Major General James C. Magee; the Surgeon General of the U. S. Navy, Rear Admiral Ross T. McIntire; the Surgeon General of the U. S. Public Health Service, Dr. Thomas Parran, and the chairman of the Division of Medical Sciences, National Research Council, Dr. Lewis W. Weed, Baltimore. The Office of Defense Health and Welfare Services is a part of the Office for Emergency Management which in turn is part of the Executive Office of the President. The director of the ODHWS is Paul V. McNutt, who is also Federal Security Administrator.



NURSES AIDES CORPS



MEDICAL CORPS

The Office of Civilian Defense has prepared insignia for volunteer civilian defense workers to wear after they have been enrolled and trained. There is one basic insignia bearing the initials "CD" in red, enclosed in a white triangle superimposed on a blue field, which is to be worn on cap and uniform collar ornaments of all civilian defense workers. Each of the fifteen activities has a distinctive design to be worn on white armbands or embroidered on the left sleeve of uniforms 1 inch below the shoulder seams. The designs have been patented by the OCD, and only enrolled civilian defense workers are entitled to wear them as part of uniforms or of any clothing that would simulate official wear. Workers or their defense councils will pay for the insignia with the possible exception of the armbands. Congress has been asked to authorize funds to distribute the latter.

Physicians and nurses serving in emergency medical field units will be identified by a red caduceus in a white triangle set in a blue circle. In the event of a war emergency such as an air raid, the problem of caring for the sick and injured will be handled by the Emergency Medical Service. Field units composed of doctors, nurses and nursing auxiliaries will set up casualty stations near the site of disaster for the purpose of giving assistance to the injured and expediting their transport to a hospital when necessary. Teams of doctors, nurses and assistants will be dispatched from this station to establish advanced first aid posts closer to the scene of the emergency.

Volunteer nurses' aides will be identified by a red cross within a white triangle set in a blue circle. This indicates that the volunteer has been enrolled and trained by the American Red Cross for service in civilian defense.

Special training by the Red Cross and by hospitals designated as training centers is required of nurses' aides. When they have completed the prescribed instruction they will become eligible to assist nurses in wards and outpatient clinics of hospitals, or in visiting nurse, public health, industrial hygiene and school health services. The insignia must not be worn until the course of training has been completed.

In no place is tuberculosis at so low a level that we may safely, and in the interest of economy, relax the intensity of the tuberculosis control program. On the contrary, because the opportunity for real control of the tuberculosis situation seems more encouraging than ever, this is the time to intensify efforts rather than relax them. — Har Mustard, M.D.

BULLETIN BOARD

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The School of Medicine and the Extension Division of the University of North Carolina, in cooperation with the Lenoir County Medical Society, have arranged the following Postgraduate Course in Medicine to be given at Kinston, beginning February 25 and continuing through April 1.

Dinners at 7 p. m., Hotel Kinston.

Lectures at 8 p. m., Hotel Kinston.

Wednesday, February 25—Pediatrics—Dr. W. A. Mulherrin, Augusta, Ga.

Wednesday, March 4—Fractures—Dr. A. R. Shands, of the Alfred I. DuPont Institute, Wilmington, Delaware.

Wednesday, March 11—Diagnosis and Treatment of Gallbladder Diseases—Dr. A. M. Shipley, University of Maryland, Baltimore.

Wednesday, March 18—The Use of Sulfonamides in General Practice—Dr. Harrison Flippin, University of Pennsylvania, Philadelphia.

Thursday, March 26—The Hypertensions in Pregnancy—Dr. James R. McCord, Emory University, Atlanta, Ga.

Wednesday, April 1—Undulant Fever As It Is Met in General Practice—Dr. Alvin E. Keller, Vanderbilt University, Nashville, Tenn.

A similar Postgraduate Course in Medicine is to be given in Raleigh beginning February 20, continuing through March 27, 1942.

The program is as follows:

Clinics at 4:30 p. m., Rex Hospital.

Dinner at 7 p. m., Carolina Hotel.

Lecture at 8 p. m., Carolina Hotel.

Friday, February 20—Handling of Sick Child in the Home—Dr. Chas. F. McKhann, University of Michigan, Ann Arbor, Mich.

Friday, February 27—Diagnosis and Treatment of Gallbladder Diseases—Dr. E. L. Eliason, University of Pennsylvania, Philadelphia.

Friday, March 6—Diagnosis and Management of Thyroid Diseases—Dr. A. C. Ernstene, Cleveland, Ohio.

Friday, March 13—Urology in General Practice—Dr. Samuel A. Vest, University of Virginia, Charlottesville, Va.

Friday, March 20—The Diagnosis and Treatment of Acute Upper Respiratory Infections—Dr. E. A. Looper, Johns Hopkins University, Baltimore, Md.

Friday, March 27—The Hypertensions in Pregnancy—Dr. James R. McCord, Emory University, Atlanta, Ga.

* * *

Dr. Walter C. Alvarez, Head of the Department of Gastroenterology of the Mayo Clinic, addressed the Whitehead Medical Society of the School of Medicine on Saturday morning, January 24.

* * *

Dr. H. G. Baity and Professor H. B. Gotaas, of the faculty of the School of Public Health, attended the meetings of the American Society of Civil Engineers in New York January 21 to 24.

* * *

Special courses in Public Health Nursing beginning in January were arranged for 12 additional public health nurses entering in the winter quarter 1942 for work in the Department of Public Health of the School of Public Health.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

During the past three weeks Dr. Herbert S. Wells, Professor of Physiology and Pharmacology, has visited the laboratories of surgical research at Johns Hopkins, the University of Pennsylvania, and Wayne University to observe studies being carried out on burns and traumatic shock. A method for clinical measurement of peripheral blood flow recently developed at the Bowman Gray School of Medicine was tested on patients in the hospitals and clinics of the cities visited, and several sets of the apparatus were provided for the workers on shock so that studies on blood flow may be included as a part of their investigations.

* * *

Dr. R. L. McMillan, Associate Professor of Clinical Medicine, and Dr. Tinsley R. Harrison, Professor of Medicine, addressed the Medical Officers of Camp Davis on January 9. Dr. McMillan's subject was "Treatment of Heart Disease in Young People", and Dr. Harrison spoke on the "Differentiation Between Structural and Functional Disorders of the Heart".

NEWS NOTES FROM THE STATE BOARD OF HEALTH

There were 85,366 babies born in North Carolina last year, as compared with 80,971 in 1940, according to figures released by the Vital Statistics Division of the State Board of Health. Deaths reported during last year numbered 32,154 which was 53,212 less than the number of births, and 40 less than the total number of deaths occurring in 1940.

The 1941 birth rate was 23.6, as compared with 22.7 the previous year; while the death rate dropped from 9.0 to 8.9, the lowest ever recorded in North Carolina. There was a noticeable increase in the number of deaths among babies under a year old, the 1941 total having been 5,073, as compared with 4,676 the preceding year, which raised the rate from 56.3 per one thousand live births to 59.4. Maternal deaths showed a decrease, however, there having been only 354 of these last year, against 438 in 1940, bringing the rate down from 5.3 to 4.1.

Deaths from what the State Board of Health terms preventable accidents numbered 1,862, which was 427 in excess of the number reported in 1940. Added to these were 297 suicides and 382 homicides, swelling the number of violent deaths last year in North Carolina to 2,541.

Deaths from diphtheria during the year dropped from 119 to 89. Figures now are beginning to reflect the compulsory immunization law passed by the 1939 Legislature. Pneumonia deaths fell from 2,041 to 1,896, and tuberculosis deaths from 1,782 to 1,769.

There was a pronounced decline in the number of deaths from puerperal (childbirth) septicemia. The total last year was only 53, as compared with 112 in 1940. The decline is attributed by Board of Health physicians to improved methods of treatment.

* * *

Dr. Carl V. Reynolds, State Health Officer, has issued a statement warning the public against the use of cooking utensils and refrigerator containers plated with cadmium, a substitute for aluminum, because of outbreaks of food poisoning traced to the use of this metal.

Dr. Reynolds' statement followed receipt of information from Paul V. McNutt, Federal Security Administrator, who announced that his agency, under which the United States Public Health Service operates, had investigated these outbreaks of food poisoning and had found they were due to cadmium, which, investigators said, contains a poisonous substance causing severe illness even when taken in small amounts.

Mr. McNutt reported that both the Food and Drug Administration and the United States Public Health Service had found that five outbreaks, involving at least fifty persons, were traced to the consumption of frozen foods which had either been chilled in refrigerators equipped with cadmium-plated ice trays or served in cadmium-plated containers.

"Symptoms of cadmium poisoning," Dr. Reynolds reported, "include acute gastritis, nausea, cramps, vomiting, diarrhea and weakness. Illness may occur within ten minutes after eating or drinking the contaminated food. As little as fifteen parts per million of cadmium may cause acute symptoms. Foods containing acid are particularly apt to be affected."

None of the cases reported, however, has been fatal, and, so far as was known last night, none has been reported in North Carolina. However, Dr. Reynolds said he felt he should issue the warning requested by Administrator McNutt, in order to put the people of this state on their guard. The Federal Security Agency, he was informed, has conferred with manufacturers who produce plated goods, and it is probable that the use of cadmium for food-container purposes will be discontinued.

Dr. Reynolds reported that "utensils in which cadmium has most frequently been detected are refrigerator ice trays, plated aluminum ware, water pitchers, meat grinders, and food choppers and mixers."

* * *

Dr. Carl V. Reynolds, State Health Officer, has issued a statement designed to clarify the necessary requirements for securing delayed birth certificates, and the procedure that must be followed in order to secure certified copies of birth records already on file at the State Board of Health.

Dr. Reynolds' statement follows:

"In view of criticisms that have reached the State Board of Health from some applicants for delayed birth certificates who have experienced delays which they termed unreasonable, I take this opportunity to say that, upon personal investigation, I have found that the fault in practically every such case rested with the applicant and not in this Department."

"The term 'delayed birth certificate' is applied to cases where the person was born before October 1, 1913, or those who, although they were born since that time, have failed to have their births recorded."

"Under the provisions of the Vital Statistics Act as amended by the 1941 Legislature, applications for delayed birth certificates should be sent, in each instance, to the Register of Deeds of the county in which the birth occurred, and not to the State Board of Health. When such applications are sent to the wrong place, as thousands have been, this entails additional correspondence and consequent delay, which results in unjust criticism."

"In order to secure a delayed birth certificate, you must send your application, together with fifty cents, to the Register of Deeds of the county in which you were born. He will then send you a notice advising you what information it is necessary for you to furnish, and when you have furnished this information, he will execute a certificate and record it. Now, if you desire a certified

copy for personal use and will send him the fee prescribed by him, the Register of Deeds will provide you with said certified copy, or you can secure it from the State Board of Health in Raleigh for fifty cents, which must be enclosed with your request."

"If you were born since October 1, 1913, and your birth was properly registered, communicate directly with the State Board of Health in Raleigh, enclosing a fee of fifty cents, and you will receive a certified copy of your birth certificate."

FOURTH DISTRICT MEDICAL SOCIETY

The Fourth District Medical Society met on February 3 at the Johnston Country Club, Smithfield, as guests of the Smithfield doctors and the Johnston County Medical Society. A barbecue supper was served.

The meeting was called to order by Dr. W. G. Wilson of Smithfield, who welcomed the guests and then turned the meeting over to the President, Dr. L. Jack Harrell of Goldsboro. Dr. T. B. Aycock of the Department of Surgery of the University of Maryland gave a paper on "The Surgical Treatment of Peptic Ulcer", and Dr. W. W. Vaughan of Watts Hospital, Durham, gave a paper on "The Value of Gastrosocopy in the Differential Diagnosis of Stomach Lesions." Both papers were illustrated with slides.

The next meeting of the Society will be held in Rocky Mount on June 6. Dr. Carlo J. Tripoli of the Department of Medicine of Louisiana State University Medical School will be the guest speaker.

BUNCOMBE COUNTY MEDICAL SOCIETY

At the first meeting of the Buncombe County Medical Society for 1942, held on January 5, Dr. G. Westbrook Murphy gave his Presidential Address. On January 19 Dr. Cecil Cullen Belcher spoke on "The Evaluation of Retrograde and Excretory Urography".

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society met on Tuesday, January 13, in the amphitheater of the Bowman Gray School of Medicine. A Symposium on Hypertension was presented by members of the faculty. "The Renal Pressor Substance" was discussed by Dr. John R. Williams; "The Renal Anti-Pressor Substance" by Dr. Arthur Grollman; and "The Modern Concept of the Mechanism of Clinical Hypertension" by Dr. Tinsley R. Harrison.

GUILFORD COUNTY MEDICAL SOCIETY

Dr. W. Halsey Barker, Associate in Medicine and Assistant Dean of the Medical School, Johns Hopkins University, was the guest speaker at the January meeting of the Guilford County Medical Society, held in the King Cotton Hotel at Greensboro on January 8. Dr. Barker's subject was the "Treatment of Pneumonia".

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society met on January 9 at the Roanoke Rapids Hospital. Dr. William H. Roper of Sanatorium presented a paper on "Tuberculosis", which was followed by a round table discussion of the subject.

HAYWOOD COUNTY MEDICAL SOCIETY

The following officers for 1942 were elected at the January meeting of the Haywood County Medical Society: President, Dr. C. N. Sisk, Waynesville; Vice President, Dr. C. F. Owen, Jr., Canton; Secretary, Dr. J. Frank Pate, Canton; Delegate to State Society Meeting, Dr. R. H. Moore, Canton; Alternate, Dr. J. R. McCracken, Waynesville.

MECKLENBURG COUNTY MEDICAL SOCIETY

Officers of the Mecklenburg County Medical Society for 1942 are: Dr. E. J. Wannamaker, President; Dr. L. C. Todd, First Vice President; Dr. J. C. Montgomery, Second Vice President; and Dr. R. Z. Query, Secretary-Treasurer. Dr. H. Stokes Munroe, Jr., is Editor of the Bulletin; Dr. Walter B. Mayer and Dr. Allan Tuggle are Associate Editors; and Dr. W. R. Pitts is Business Manager.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Thirty-Eighth Annual Congress on Medical Education and Licensure will be held at the Palmer House in Chicago on February 16 and 17. The Congress is composed of the Council on Medical Education and Hospitals of the American Medical Association and the Federation of State Medical Boards.

AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

St. Louis, Missouri, April 6-10, 1942

The general features of the program for the coming Congress may be announced as follows:

The morning sessions will be divided into two periods from 9:30 to 11 and 11 to 12. The more formal presentations will appear in the first period.

Monday morning at 11 o'clock there will be a general "Obstetric Information Please", based on the well known quiz program and presided over by a moderator and four experts. This will be repeated on Wednesday morning, for shock and hemorrhage and Friday, on economics. Clinical conferences on genital infections will be held Tuesday morning at 11 and Thursday morning on "How not to treat Carcinoma". During the afternoons various groups will present formal programs devoted to nursing, public health, and hospital administration, among which will be certain combined programs.

A special feature of this Congress will be a daily consultation service at 3:30. About 50 nationally known physicians will make themselves available for fifteen-minute consultations through a registration system by individual practitioners who may desire such advice in their specific problems.

Round table discussions will also be arranged by the section chairmen.

Practical demonstrations are scheduled in the scientific exhibit area on manikin deliveries, home care technique, and blood transfusions. Details of programs of other sections will appear shortly.

Further information is available at the Central Office of the Congress at 650 Rush Street, Chicago. Hotel reservations should be made directly and at an early date. Physicians, nurses, public health administrators, educators, and hospital administrators are urged to send in their registration fee of \$5.00.

GEORGE W. KOSMAK, M.D.
Chairman, Professional Publicity.

CHICAGO SELECTED FOR 1942 CLINICAL CONGRESS OF THE AMERICAN COLLEGE OF SURGEONS

Because of the war, the thirty-second annual Clinical Congress of the American College of Surgeons will be held in Chicago October 19 to 23, instead of in Los Angeles as originally planned. Headquarters will be at the Stevens Hotel. The twenty-fifth annual Hospital Standardization Conference sponsored by the College will be held simultaneously. The programs of both meetings will be based chiefly on wartime activities as they affect surgeons and hospital personnel in military and civilian service.

SOUTH ATLANTIC ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

The South Atlantic Association of Obstetricians and Gynecologists met on February 6 and 7 at the Atlanta Biltmore Hotel in Atlanta, Georgia. North Carolina physicians appearing on the program were Dr. C. H. Mauzy of Winston-Salem, who gave a case report on "Acute Yellow Atrophy of the Liver"; Drs. Kenneth Dickinson and I. M. Proctor of Raleigh, who presented a paper on "Comparative Measurements of the Female Pelvis"; and Drs. Bayard Carter of Durham and O. Hunter Jones of Charlotte, who were discussants of papers. Among the officers of the Association were Dr. Oren Moore of Charlotte, President-Elect, and Dr. Robert A. Ross of Durham, Secretary-Treasurer. Dr. W. Z. Bradford of Charlotte represented North Carolina on the Executive Committee.

NEWS NOTES

Dr. Thomas H. Byrnes of Charlotte has been called to active duty at the Naval Hospital at Charleston, South Carolina. Dr. Byrnes organized a hospital unit there last June and was commissioned as a Lieutenant Commander.

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Dr. J. Rush Shull of Charlotte presented a paper on "X-Ray Examination of the Small Intestine" before the York County Medical Society in South Carolina on January 6.

* * *

Dr. R. A. White of Asheville was elected Secretary-Treasurer of the Southern Inter-Urban Obstetrical and Gynecological Club during the session of the Southern Medical Association at St. Louis, and was re-elected Vice Chairman of the Section on Obstetrics of the Association.

* * *

Dr. Curtis Crump of Asheville presented a case in the lymphoblastoma group before the American Association for the Study of Neoplastic Diseases, meeting in Washington, D. C., December 18-20.

* * *

Dr. Tom Stringfield, Jr., of Waynesville is now serving with the American Medical Unit somewhere in England.

* * *

Dr. Dudley Smith of Waynesville, who has been serving for more than a year with the Harvard Medical Unit in England, has returned home.

AUXILIARY

THE PUBLIC RELATIONS COMMITTEE

The Public Relations Committee of the Auxiliary to the Medical Society of the State of North Carolina was first organized because it was felt that wives of doctors through their membership in other organizations could do much to help interpret the aims and objectives of the Medical Society to the general public, to awaken the public from its indifference, and to abolish its distrust of organized medicine. The committee was organized in 1932 with Mrs. J. O. McClelland as its first chairman.

Mrs. Frank P. Dwyer, National Chairman of Public Relations, in her excellent article in the post convention issue of the *Bulletin* of the Woman's Auxiliary to the American Medical Association, says that the aim of this committee should be "to maintain a profound and lasting confidence as well as an understanding and abiding interest in American medicine, the achievements of which have given us the highest standards of medical service in the world." The world in which we find ourselves today offers unlimited opportunities to members of the State Medical Auxiliary to accomplish this aim.

Now that women everywhere are asking, "What can I do to help my country?" the outline of work planned by Mrs. Dwyer seems an answer not only for wives of doctors, but for all who are really anxious to work intelligently in this time of emergency. As an aid to those who are working in various civic organizations and clubs the last half of the comprehensive outline is given below.

Home Defense as Auxiliary Work in public relations

A. Nutritional defense.

1. For the annual public relations program present authentic information on nutrition with respect to such subject matter as the following:
 - a. Nutritional problems during war.
 - b. Food values, their preservation for the maintenance of health.
 - c. The relation of refined foods to health.
 - d. The adequate diet at low cost.

- e. Vitamin concentrates, their value and use.

Note: Extreme care should be taken to see that the most authoritative speakers available are secured for such programs. Medical subjects should be presented by trained medical speakers.

B. Civilian Defense.

1. Morale in the community.
 - a. Cooperate in presenting programs to lay groups stressing
 - (1) the need of adjustments to unpredictable changes.
 - (2) the need and assurance of return of personal rights.
 - (3) the importance of preserving the democratic way of life.
 - b. Cooperate with local civilian defense committees in all plans for home defense.
 - c. Cooperate with relief organizations, such as the Red Cross.

Note: As an auxiliary organization we may not affiliate with other organizations. However, we are urged to cooperate with all relief organizations in every way possible.
2. Material aid for physicians and their families in military camps (See resolutions passed by House of Delegates of Woman's Auxiliary).
 - a. Assist in securing housing for physicians' families.
 - b. Provide social and recreational activities for them.
 - c. Arrange for attendance of doctors and wives in military service at local medical and auxiliary meetings.

C. Pan American Defense.

1. Promote interest in the medical and social problems of other American nations.
2. Study means of harmonious cooperation for mutual benefit.

May we not as doctors' wives bend every effort to interest all organizations to which we belong in some phase of defense work? In this way every member of the Auxiliary can become a member of the Public Relations Committee.

BOOK REVIEWS

Surgical Practice of the Lahey Clinic. 897 pages with 376 illustrations. Price, \$10.00. Philadelphia: W. B. Saunders Company, 1941.

The title of this book indicates that it relates the experiences of the men in the Lahey Clinic. It does just that, for bibliographies are meager and usually refer to the work of some member of the clinic. One is impressed by the volume of work and the skill with which it has been done, as evidenced by the mortality statistics. Many new and useful procedures have been devised and are clearly described by the clinic group. There is considerable repetition of operative procedures that might well be eliminated. In discussing all major operations emphasis is placed on the use of trained anesthetists. Certainly every surgeon should be in accord with this idea. Many references are made to the experience of the clinic, which is undoubtedly great; however, if some of the editorial pronouns were omitted, the book would be more pleasant to read.

There are comparatively few mistakes in the text and those that are present are unimportant; but it is rather startling to read about a "urinary intake". The book is well illustrated and contains much helpful information for the surgeon.

Manual of Diseases of the Eye. By Charles H. May, M.D., Consulting Ophthalmologist to Bellevue, Mt. Sinai and French Hospitals, New York; formerly Chief of Clinic and Instructor in Ophthalmology, Medical Department of Columbia University and Director of the Eye Service at Bellevue Hospital, New York. Assisting in this edition was Charles A. Perera, M.D., Associate in Ophthalmology, College of Physicians and Surgeons, Medical Department of Columbia University, New York; Assistant Attending Ophthalmologist, Presbyterian Hospital, New York. Ed. 17. Baltimore: William Wood and Company, 1941. Cloth, \$4.00.

In this seventeenth edition of May's text there are 387 illustrations, including 32 plates, with 93 colored figures. The work has been brought thoroughly up to date. Some parts have been rewritten entirely. Of special interest are those additions which adapt the work to the present military and civil service requirements. Among the additions are two color plates. One presents one each of the series of Stilling's and Ishihara's pseudo-isochromatic plates for testing color perception; the other shows the Koch-Weeks and Morax-Axenfeld bacilli. A valuable addition to the work is an appendix giving the ocular requirements for admission to the Army, Navy, Marine and Air Services of the United States. Now that we are at war these are especially timely. The only errors observed in the book are in the titles of the plates for testing color perception. The "Stilling" plate is entitled "Ishihara", and the "Ishihara" is entitled "Stilling".

May's book is a standard text for the undergraduate and the general practitioner of medicine. Its popularity is attested by the fact that seventeen English editions have been published and that it has been published in nine other languages, a Portuguese and an East Indian edition having been published since the sixteenth English edition came out in 1939.

Cardiac Clinics: A Mayo Clinic Monograph. By Frederick A. Willius, B.S., M.D., M.S. in Med., Head of Section of Cardiology, Mayo Clinic, and Professor of Medicine, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota. Illustrated. Price, \$4.00. St. Louis: The C. V. Mosby Company, 1941.

In this little book Dr. Willius has attempted to summarize many of the important features of the common types of heart disease. The discussion is centered around specific case histories and the various types of heart disease are not discussed in detail as such, but mainly in relation to particular patients. This method of presentation has certain advantages over the more commonly used methods in which types of diseases are discussed in detail, and reference is made, either not at all or only in passing, to specific instances of the disease. The advantage of the method of presentation employed by Dr. Willius is that it often enables the reader to pick out an illustrative case which fits one of his own patients. The disadvantage of this method is that it often gives the reader too narrow a point of view. Some physicians will benefit greatly by a book of this type. Others will derive more value from a book in which the more orthodox method of presentation is used.

The discussion is limited largely to the common heart diseases and to the purely practical aspects of these diseases. On the one or two occasions when the author goes into the pathological physiology of cardiac disease, his presentation is less accurate and less specific than when he focuses his attention on the more practical considerations. The man who is already experienced and thoroughly up-to-date in the field of cardiac disease will find little that is new in Dr. Willius' book. The medical student probably needs a different type of book. The average general practitioner, who sees heart patients only occasionally, will find a great deal of valuable information in *Cardiac Clinics*.

Infant Nutrition. By McKim Marriot, M.D., and P. C. Jeans, M.D. Ed. 3. Pp. 475. Price, \$5.50. St. Louis: The C. V. Mosby Co., 1941.

In an excellent revision by Dr. Jeans, Marriot's *Infant Nutrition* is now brought up to date in this third edition. Dr. Jeans has continued Marriot's effort to provide a small but complete textbook covering all phases of nutrition in infancy.

In general, *Infant Nutrition* provides a very good review of the subject for general practitioners and pediatricians, in whose practices nutrition plays such a great role. In feeding children it is very easy to get into habits which are not necessarily in line with our present-day knowledge of nutrition. In this book it is pointed out that the feeding of normal infants can be a very simple procedure without resort to complicated formulas or expensive commercial products which for their popularity depend upon very questionable scientific theories. Dr. Jeans again stresses the value of acidified milk mixtures for infant feeding, particularly in the South.

In addition to the chapters covering the specific techniques of feeding infants, there is a very excellent section in the book discussing theoretical nutritional requirements of infants, with a separate chapter on the various vitamins. The last third of the book is concerned with various nutritional diseases, including dysentery and diarrhea, and discusses particularly the feeding of infants with these conditions.

This book should be of great value to anyone interested in the care of children.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., Lieutenant-Colonel, M.R.C., U. S. Army, Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association, Editor of "American Pocket Medical Dictionary"; with E. C. L. Miller, M.D., Medical College of Virginia. Ed. 19. 1647 pages, illustrated. Philadelphia and London: W. B. Saunders Co., 1942.

This nineteenth edition of *The American Illustrated Medical Dictionary* has received a thorough revision. There have been added 2,000 new words, covering the terminology in endocrinology, physical therapy, biochemistry, new medicinal preparations, and other recent innovations which the student and practitioner encounter in daily reading. The indispensability of a medical dictionary needs no comment, and the present volume is recommended to anyone lacking this essential tool or desiring to replace an out-of-date edition. It is in the reviewer's opinion one of the best, if not the best, of the currently available medical dictionaries.

Essentials of Electrocardiography. By Richard Ashman and Edgar Hull. Ed. 2. Price, \$5.00. New York: The Macmillan Co., 1941.

This text is an excellent treatise on electrocardiography and is exceptionally well arranged. The illustrations and charts are particularly good. The section on borderline electrocardiograms is especially useful, particularly since these records are the source of much error. The idea of correlating the clinical data and using electrocardiography purely as a laboratory procedure to confirm clinical impressions is commendable. The authors' principle of not reading too much into any given electrocardiogram is one which should be followed by those who endeavor to perform this type of work.

The purpose of the text as stated by the authors is to present a treatment of theoretical and practical essentials of electrocardiography. The book is planned for beginning and advanced students. This is an excellent work, but probably it is couched in terms too complex for the average medical student to comprehend.

Nutritional Deficiencies: Diagnosis and Treatment. By John B. Youmans, A.B., M.S., M.D., Associate Professor of Medicine and Director of Postgraduate Instruction, Vanderbilt University Medical School, Nashville, Tennessee; assisted by E. White Patton, M.D. 385 pages, illustrated. Price, \$5.00. Philadelphia: J. B. Lippincott Company, 1941.

The rapid progress which has been made in our understanding of the clinical aspects of nutritional deficiencies and the appreciation of their multiple manifestations and wide distribution will make the present volume a welcome addition to the practitioner's library. The author has had wide experience in the handling of patients suffering from the various avitaminoses, and in the present volume covers fully all the clinically significant facts. Tabular summaries of the vitamins, their principal dietary sources, and the laboratory methods used in the diagnosis of deficiency diseases are appended. The book is admirably written in a clear and succinct style and may be read with profit by all engaged in the practice of medicine.

Manual of Clinical Chemistry. By Miriam Reiner, M. Sc., Assistant Chemist to The Mount Sinai Hospital, New York; and Harry Sobotka, Ph.D., Chemist to The Mount Sinai Hospital. 296 pages, with 18 illustrations. Price, \$3.00. New York: Interscience Publishers, Inc., 1941.

The value of chemical analytical procedures in medical practice increases constantly and has reached a stage where certain procedures are practically indispensable. The present volume is complete and up-to-date, including special procedures used in the avitaminoses, in endocrine disturbances, and in hemorrhagic disease. In spite of this completeness, it is written in so brief and succinct a manner that it may serve as a pocket-handbook for ready reference by the intern, technician, or anyone called upon to carry out these laboratory procedures. The practitioner who does his own clinical chemical tests will also find this manual an invaluable aid.

Shock Treatment in Psychiatry: A Manual. By Lucie Jessner, M.D., Ph.D., and V. Gerald Ryan, M.D. Cloth. 149 pages. New York: Grune and Stratton, Inc., 1941.

This is an authoritative manual on the various methods of shock therapy utilized in psychiatry. The authors have reviewed the literature in a thorough and competent manner and presented their material in a well organized and readable form. The book deserves a place in the library of every psychiatrist and neurologist, and will likewise find a warm reception among practitioners of medicine who wish to be brought abreast of this new development in therapy.

As befits its importance, insulin shock receives the greater share of space in the book. The historical aspects of insulin therapy are treated in an interesting manner. It is recalled that Manfred Sakel, who had used insulin in a large number of cases of drug addiction, first used the hormone in the production of hypoglycemic states in 1928. The early cases in which remarkable mental changes followed severe insulin reactions led Sakel to the conclusion that the procedure might be of benefit in the treatment of certain psychoses. Whatever the eventual conclusion may be regarding shock therapy, it is already evident that it will come to be regarded as one of the landmarks in the colorful history of psychiatry. Jessner and Ryan have performed a service in assembling our knowledge of this subject.

For the physician who utilizes shock therapy in his practice the book gives specific information as to technique, and the authors discuss fully the complications to be encountered, the changes during treatment, and the mechanism of improvement. It is emphasized that the cardinal prognostic factor is the duration of the disease before the onset of treatment.

Metrazol and electric convulsive therapies are also discussed in proper detail. The well recognized point is made that metrazol is finding its most effective use in the affective disorders. Its use in depressive patients is described as strikingly helpful. The difficult problem of involutional melancholia has been approached in the light of this knowledge, and the results have been excellent.

Altogether, the book makes interesting reading, and deserves careful attention. Surely psychiatry is entering a new era, and this manual is "must" reading for the physician who intends to utilize these important new aids in therapy.

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A FURTHER IMPROVED TECHNIQUE FOR THE CURE OF INGUINAL HERNIA

T. C. BOST, M. D., F. A. C. S.

CHARLOTTE

The principles of the Bassini and the Halstead operations for the cure of inguinal hernia are still considered sound; however, there have been many modifications. Gallie and LeMesurier⁽¹⁾ and others have recommended the use of both living and dead fascial strips. Andrews⁽²⁾ has presented an imbrication suture, and also a fascia-to-fascia method of repair⁽³⁾. Others have advocated various modifications of the original technique.

This multiplicity and variety of techniques, together with the use of various kinds of suture material, would tend to show that none of these operations is entirely satisfactory and that far too many recurrences are still taking place. Coley⁽⁴⁾ has stated that recurrences should not occur in more than 5 per cent of the cases operated upon. Cattell and Anderson⁽⁵⁾, reporting from the Lahey Clinic, give a recurrence rate of 6.7 per cent in unilateral, and 18.1 per cent in bilateral operations, and conclude that in bilateral hernia the two sides should not be operated on at the same time. Stanton⁽⁶⁾ states: "Cases of indirect inguinal

hernias operated upon by competent operators will, on the average, show 5 per cent recurrences at the end of the first year and 1 per cent per year additional thereafter." In direct hernia he considers a recurrence rate of 25 per cent over a five-year period a conservative estimate.

Burdick and others⁽⁷⁾ of the staff of the Hospital for the Ruptured and Crippled report their experience in 1,485 operations upon 1,092 patients in which fascial sutures were used. They found that infections were more common with fascia than with other forms of suture material. The incidence of recurrences was 29 per cent. This high figure they attribute partly to weak spots caused by the introduction of the large fascia needle through the transversalis fascia and Poupart's ligament. Two patients died of hemorrhage caused by the needle. These authors state: "The fact that in many of our cases operated on more than once we were unable to find any evidence of previously used fascial sutures forces us to conclude that the theory of fascial sutures for hernia repair is based on an erroneous principle."

Andrews⁽⁸⁾ states that about four million persons in the United States have hernia. This condition imposes a serious economic handicap on many of those affected, and every effort should be made to reduce the chances for recurrence.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

1. Gallie, W. E. and LeMesurier, A. B.: Living Sutures in the Treatment of Hernia, *Canad. M. A. J.* 13:409 (July) 1923.
2. Andrews, E.: Andrews Imbrication Method for Inguinal Hernia, *S. Clin. North America* 14:919 (August) 1934.
3. Andrews, E.: A Method of Herniotomy Utilizing Only White Fascia, *Ann. Surg.* 80:225 (August) 1924.
4. Coley, B. L. and Burke, E.: The Operative Treatment of Hernia by Living Sutures, *Ann. J. Surg.* 2:1 (January) 1927.
5. Cattell, R. B. and Anderson, C.: End Results in the Operative Treatment of Inguinal Hernia; A Report of 150 Cases at the Lahey Clinic, *New England J. Med.* 205:430 (August 27) 1931.
6. Stanton, E. A.: Hernia Problem, *Indust. Med.* 6:70 (February) 1937.

7. Burdick, C. G., Gillespie, D. H. M., and Higinbotham, N. L.: Fascial Suture Operations for Hernia, *Ann. Surg.* 100:333 (September) 1937.
8. Andrews, E.: Criteria of Operability of Inguinal Hernia, *Internat. J. Med. and Surg.* 44:453 (October) 1931.

In a consideration of the various operations for the cure of inguinal hernia, with their many modifications, it is agreed that the fundamental principles involved are: (1) high ligation of the sac (Sheer⁹) emphasizes the importance of the sac thus: "When operating for the cure of inguinal hernia the motto must be the sac, the whole sac, and nothing but the sac."; (2) adequate reinforcement of the defective abdominal wall; (3) primary healing of the wound. It is well known that a large percentage of the ordinary hernias, especially those of children and young adults, can be cured by simply closing the sac without plastic disturbance of other tissues and without paying any special attention to the method of suturing the different structures; but for the unusual and difficult cases, including all direct hernias and recurrences, a more elaborate technique must be employed to get the maximum number of cures. It is possible to err either by doing too much, or by doing too little. Both these mistakes have their origin in an over-standardization of the method in common use. Other causes of failure to get a cure include lack of attention to asepsis and hemostasis.

The choice of an anesthetic is important. Many patients with hernia have chronic bronchitis with emphysema; they cough a good deal, and coughing is liable to burst catgut sutures. In these cases living or non-absorbable sutures are all the more necessary. Ether is objectionable in such cases. These patients do much better under local or spinal anesthesia.

Today probably 90 per cent of the operations for inguinal hernia include suturing the internal oblique and transversalis muscles, with their conjoined tendon, to Poupart's ligament, either in front of the cord or behind it. This procedure involves the suturing of muscles to fascia.

The experimental work of Seelig and Chouke¹⁰ might tend to show that suturing of the internal oblique and transversalis muscles, with their conjoined tendon, to Poupart's ligament is futile and useless. Basing their opinion on experiments in which the muscles of the thigh of a dog were sutured to a fold of fascia lata—structures somewhat analogous to those used in the re-

pair of inguinal hernia—they concluded that normal muscle would not unite with fascia.

Koontz¹¹ repeated the experimental work of Seelig and Chouke in the thigh of a dog and found that there is normally a layer of areolar tissue between the fascia lata and the underlying muscles. By simply suturing fascia to muscle Koontz found the result to be the same as that described by Seelig and Chouke, but when the layer of areolar tissue was first removed the muscle became firmly adherent to the fascia.

Before these reports appeared, I had been conducting some experimental work, using the structures in the inguinal region of the dog to determine the effect of trauma on the union of muscle and fascia. The experimental work consisted of dissecting the two inguinal regions of a dog. On one side the parts—muscle and fascia—were curetted, and in some instances narrow strips of muscle cut away in order to give a fresh surface, and the parts were then sutured, the raw surface of the ligament and the fibrous components of the muscle being brought into closer contact. On the other side simple suturing was done without curetting and with the least possible trauma; this side was to be used as a control. Catgut and silk were used as suture material. At the end of periods varying from one to six months the fields of operation were studied. In a comparison of the two sides it was found that in every instance fibrous union between the muscle and fascia was very weak where simple suturing had been done; while on the side in which the parts had been curetted or otherwise traumatized the union was much denser. Occasionally, in separating the muscle from the fascia, I found that bits of muscle remained attached to the fascia and came away with it in the dissection, so firmly was it attached. The density of union varied directly with the extent of the trauma and the time elapsing between the operation and the investigation. Catgut and silk seemed to be equally satisfactory as suture materials.

It has long been established that in the repair of muscle wounds the muscle fibers play little or no part, and that the repair is effected by a connective tissue stroma which forms a firm scar. Microscopically the scar is held in close and firm contact by innum-

9. Sheer: *Proceeds Royal Society of Medicine*, Vol. 30:586, 1937.

10. Seelig, M. G., and Chouke, K. S.: *A Fundamental Factor in Recurrence of Inguinal Hernia*, *Arch. Surg.* 7:533 (November) 1923.

11. Koontz, A. R.: *Muscle and Fascia Suture with Relation to Hernia Repair*, *Surg. Gynec. Obst.* 42:222 (February) 1926.

able ramifications of the connective tissue stroma among the muscle fibers, making it difficult to separate the two kinds of tissue.

Clinically and experimentally, it has been demonstrated that fascia and muscle do unite; moreover, this experimental work shows that much denser union takes place after trauma. It has been known for a long time that in cases of non-union of fractures irritation or trauma to the fragments, obtained by rubbing the ends together, curetting, or drilling holes, increases the callus formation and thus in many cases causes union to take place. We are all familiar with the procedure of curetting or irritating chronic ulcers in order to stimulate the formation of granulation tissue, and it is common and sorrowful knowledge that irritating two layers of peritoneum causes the parts to become densely adherent. Irritation resulting from wearing a truss over a long period of time is thought to be a factor in producing adhesions which occasionally result in a cure. The injection treatment for hernia is based on irritation from a chemical. This principle of irritation, however, so far as I know, has never been applied to tissues in the operation for hernia, where success depends solely on the density of tissue union.

Operative Procedure

This principle of irritation, which I presented before the Surgical Section of the Medical Society of the State of North Carolina in 1926, is combined with an additional new technique in the operative procedure which I shall describe. This new technique is based on a very old surgical principle—namely, relaxation of tissues to take tension off of suture lines. I have been employing the following operative procedure for the repair of hernia since 1927:

The usual oblique incision, parallel with Poupart's ligament, is made. The fascia of the external oblique muscle is exposed above the canal, and is stripped free of fat and areolar tissue from above the canal down to the level of Poupart's ligament. Stripping is not done medially, as it is not desired that the blood supply in this area be disturbed. The inguinal canal is then opened along its upper border, so as to give a wide external flap, by incising the fascia of the external oblique muscle in the direction of its fibers,

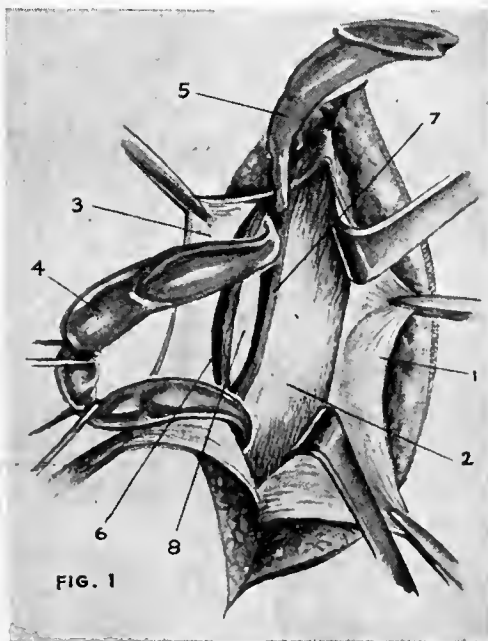


Fig. 1. 1. Inner leaf of the external oblique muscle widely retracted almost to the midline, exposing completely the anterior rectus sheath. 2. Anterior rectus sheath covering the rectus abdominis muscle. The sheath is exposed completely and is now ready for multiple nicks. 3. Retracted outer leaf of the external oblique muscle. 4. Spermatic cord retracted out of field. 5. Sac freed and opened. 6. Poupart's ligament, showing the traumatized area. 7. External oblique and transversalis muscles with their conjoined tendon, showing traumatized margin. 8. Wide space through which the hernia occurs.

well above the internal ring. This gives a rather wide flap of muscle down to Poupart's ligament. This flap is retracted, Poupart's ligament is identified, and the flap and the ligament are traumatized with dry gauze after all fat and connective tissue have been freed. The lateral border of the internal oblique and transversalis muscles and their conjoined tendon are traumatized in a similar way. This traumatization is thoroughly done, and in the case of a large hernia, direct hernia and recurrent hernia these two structures are traumatized (fig. 1) with a curette. The gauze is usually sufficient in the ordinary case. The medial flap of external oblique muscle is then retracted far toward the midline, exposing completely the anterior sheath (fig. 1) covering the rectus abdominis muscle. This fascia is nicked (fig. 2) with the scalpel, beginning just

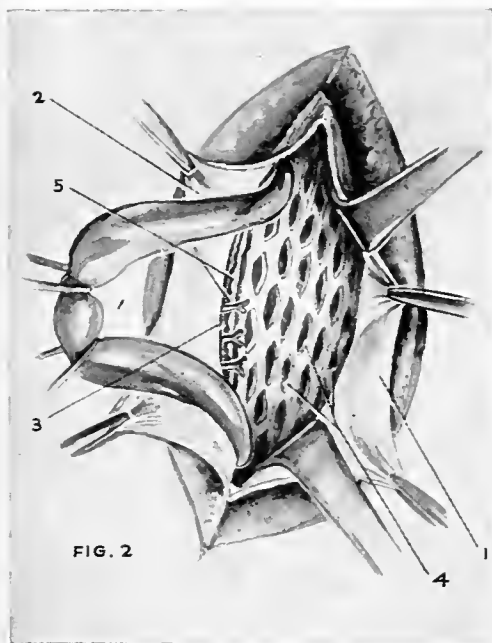


FIG. 2

Fig. 2. 1. Inner leaf of the external oblique muscle. 2. Outer leaf of the external oblique muscle. 3. Poupart's ligament. 4. Multiple nicks of the anterior rectus sheath which have flared open, resulting in relaxation of the internal oblique and transversalis muscles with their conjoined tendon so that these structures fall against Poupart's ligament without tension. 5. The internal oblique and transversalis muscles, their conjoined tendon having been relaxed and traumatized, are now being sutured to Poupart's ligament, which has also been traumatized.

above the level of the internal ring and extending well down to the pubis, with thirty to forty nicks placed close together. These nicks are made longitudinally to the rectus muscle, and are about one-third to one-half inch in length. This procedure will relax the tissue and allow the internal oblique and transversalis muscles and their conjoined tendon to fall against Poupart's ligament without any tension (fig. 2).

The sac is then isolated, opened, emptied, ligated and transfixed high above the internal ring beneath the arching fibers of the internal oblique and transversalis muscles.

The internal oblique and transversalis muscles and their conjoined tendon are then sutured to Poupart's ligament, the fibers of the ligament being caught at different levels so as to make a wide attachment. This can easily be done by six to eight sutures and

without the least bit of tension. The cord is usually transplanted, except in children. Extra-aponeurotic transplantation of the cord is done in direct hernias and in large oblique and recurrent hernias. This transplantation is especially indicated in direct hernias and recurrent hernias to fortify Hesselbach's triangle.

In any event the external oblique muscle is widely overlapped, not only for its additional support but to further relieve tension of the deep suture line (conjoined tendon and Poupart's ligament).

Chromic catgut was used in this series. Cotton sutures are now being used, with much less drainage.

Report of Cases

A consecutive series of 576 inguinal hernia operations were done in Charlotte hospitals and in the Reeves Hospital at Lincolnton in the period from January 1, 1927, to July 1, 1939. The youngest patient was a premature baby three weeks old, with a strangulated hernia. The oldest was a man of 87 with a double hernia. Of the 576 cases, 450 hernias were indirect and 126 direct; 112 were bilateral; 42 were recurrent, and 9 of these were bilateral. These recurrent cases had been operated on from one to four times. Thirty-eight were strangulated.

About 68 per cent of the cases (381) were followed for a year or more, and in this group there were 4 recurrences—a fraction over 1 per cent. One patient had recurrence three months after operation following an accident. It has since been repaired and he now has a good result. The second case had been operated on elsewhere and had had a recurrence. Following my operation he had an infection and a recurrence in a few months. The other two cases were strangulated direct hernias in obese men with pendulous abdomens.

With the application of this technique which I have discussed, I am about ready to agree with Turner¹² that there is virtually no hernia that cannot be cured by surgical operation. I would go a step further and say (not in a boasting way) that I have yet to find the inguinal hernia that cannot be cured by operation.

Conclusions

1. Muscle and fascia, when freed from

12. Turner: *Proceeds Royal Society of Medicine*, Vol. 30: 535, 1937.

areolar tissue and brought into direct contact and sutured, unite.

2. Much denser union takes place between muscle and fascia when the parts are traumatized, with the use of a curette or by snipping away bits of muscle tissue.

3. Multiple nicks of the rectus sheath give sufficient relaxation to permit suture of the conjoined tendon to Poupart's ligament without tension.

4. Wide overlapping of the external oblique muscle results in additional relaxation of the deep tissues and their suture lines.

5. If these principles of irritation and relaxation are applied in operating for hernia, denser and firmer union results, thereby offering a greater barrier to recurrence and lowering the percentage of failures.

Abstract of Discussion

Dr. John Kennedy (Charlotte): I had the pleasure of seeing some of Dr. Bost's experiments, in which he demonstrated that fascia and muscle will unite: first, if there is no interlying fatty tissue, and second if the tissues are traumatized. Those experiments were of distinct help to me in getting union in cases of hernia.

Dr. Bost made an even better contribution to the cure of hernia when he began the use of the procedure that he described last, in which he makes multiple punctures of the fascia overlying the lower rectus muscle in order to get relaxation of the conjoint tendon and the lower oblique muscle. With this procedure one is able to suture these structures well down to Poupart's ligament without appreciable tension. The structures practically fall together, and do not have to be pulled together by sutures.

This method is particularly applicable to direct hernias, in which there is the largest separation of these structures and in which recurrence is more likely. If the patient vomits or hiccoughs or inadvertently gets out of bed there is very little tension put on the sutures. Even if some infection develops there is usually a good union, if the sutures are put in in this way.

I think Dr. Bost has given us two distinct improvements in the operation for hernia, and since watching his work and adopting his technique I undertake operations for hernia with much less misgiving than before.

Dr. Donnell B. Cobb (Goldsboro): I should like to ask Dr. Bost a question. I notice that in doing this experimental work some years ago he used silk and catgut. I should like to know more about his experience with the use of cotton.

Dr. C. V. Tyner (Leaksville): The principle of relaxation of structures by multiple punctures is applicable not only in operations for inguinal hernias, but in other procedures as well. I recently operated on a patient who was in poor general condition, and utilized this principle in bringing the abdominal wall together. The patient had pneumonia following the operation, and a rather stormy convalescence, with coughing and straining. In spite of this he had a good result.

It has also been our experience that traumatizing the tissues increases the firmness of the wound.

Dr. Bost: I shall be glad to confess where I got the idea of traumatizing the tissues. Soon after I came to Charlotte an old man with a very large hernia came to my office and asked me if I could fix it. I told him that I was in that business. He said, "How are you going to fix it?" I told him that I would cut down and dissect the parts and sew it together. He replied, "That will not do it." When I asked him why it would not, he said, "Isn't it something like a puncture in an automobile tire? If I have a puncture in a old tire and put a patch on there it will not stick unless I roughen it up. Isn't this about the same way?" That is an example of getting ideas from a field outside of medicine, as we often do.

As to the use of sutures, in the experimental work I used both catgut and silk, and I can not say that I saw any difference afterward so far as the sutures are concerned. In all this series of operations, from 1927 to 1939, I used catgut; but I am now using cotton altogether, not only in hernias, but in all clean surgical cases. I am certainly pleased with the results. I find that there is much less drainage with the use of cotton sutures.

THE MANAGEMENT OF SOME OF THE PROBLEMS OF LATER LIFE

ROSCOE D. McMILLAN, M. D.

RED SPRINGS

Within the past century the advance of medical science has practically changed "the survival of the fittest" to the survival of everybody, fit or not. However, it is not mere increase of years that should be sought, but health in old age. Most of those who dread old age are thinking of the decrepitude which so often accompanies it—failing senses, feebleness, stiffness of the joints, arteriosclerosis, and heart ailments. Are these infirmities necessary?

This question must be seriously considered when we read a report of the committee on population problems of the National Resources Commission, made in 1938, which pointed out that by 1980—if present population trends in the United States continue—there will be only 6,500,000 children under 5 years of age, and 22,000,000 people over 65 years of age. As someone aptly stated, "We are becoming a nation of elders."

The answers to these problems of old age, however, are far from clear. It is with these problems that everyone must concern himself, for logic inexorably leads to the conclusion that either these increasing millions

of elderly persons must have the opportunity to work and support themselves or the proportionately smaller group of younger persons will have to support them in one way or another.

The practice of medicine is changing. As acute infectious diseases yield more and more to preventive measures, the chronic and progressive disorders of middle and later life take increasingly important places, and medical men are now beginning to specialize in geriatrics. Aside from picking one's ancestors, the only preventive measures known to be at all effective for the chronic degenerative diseases of later life are the establishment of proper habits in early life, the avoidance of excesses, and the prompt removal of infectious foci detected by periodic health examinations. Biochemical experimentation has put the study of nutrition on a firm scientific basis and has led to the isolation of many vitamins and the determination of their functions. While the full influence of improved nutrition resulting from this work has not manifested itself, undoubtedly lower morbidity and mortality rates in a number of diseases will eventually follow.

Before discussing some of the special considerations in caring for senile patients, I should like to mention some of the general characteristics of these patients. Having survived a life time of conflict with microbes, poisons, starvation and strain, old people may have more confidence in their own remedies than in those of the physician.

It is a little difficult to know when senility begins. The medical man realizes that its onset is not marked solely by the flight of time. Physiologically it appears when degenerative changes have limited the individual's activities and lessened or abolished his sex life. Pathologically its onset is visualized in extensive arteriosclerotic changes which make impossible an adequate distribution of blood and oxygen to the tissues.

Healthy, normal old age with equal wearing out of the parts is extremely rare. Pathologic or abnormal old age is burdensomely common. In a study of 300 patients 60 or more years of age Barker determined that the circulatory apparatus was most commonly affected, with the nervous system, the locomotive apparatus, and the digestive system, in the order named, being runners-up.

Cardiovascular Disorders

As time allows me to discuss but few of the problems of old age, my first consideration is the cardiovascular system. In elderly people the heart presents many clinical pictures. Coronary arterial disease is the chief feature. There are instances of long-standing rheumatic diseases of the aortic and mitral valves. There are long surviving or late developing cases of syphilitic aortitis. But the degenerative lesions dominate in the cardiac disease of old age and produce the phenomenon of coronary thrombosis or spasmodic angina. Failure with congestion often supervenes upon one or the other of these, or occurs without these preliminaries, as the amount of sound muscle in the heart dwindles. These conditions, of course, are hastened by the increased arterial pressure which is so frequent with advancing years.

For the prevention of anginal pain the type of exertion that produces the pain must be studied. Pain may be caused by types of exertion that require much less effort than other types which produce no pain at all. Generally speaking it is better to have the patient engage in some sort of occupation. Absolute rest after meals is highly important, and careful attention should be given to the bowels (straining at stool often precipitates an attack), and to the avoidance of emotional stress of a business, political, or domestic nature. Medication should be directed toward increasing the coronary blood flow. For immediate relief of pain nitroglycerine under the tongue has no equal. As permanent coronary dilators aminophylline and theobromine have proven very satisfactory. Phenobarbital to relieve emotional tension is valuable.

The major cardiac emergency in the aged is acute coronary occlusion. The old axiom, "The aged should be kept out of a morbid sick bed," has no place here. Rest, oxygen, morphine, atropine, and sometimes aminophylline constitute the emergency treatment. Recently, papaverine has been used in these cases, as it does not augment vagus activity and there is some experimental evidence to indicate that it increases the coronary flow. In cases where papaverine will not control the pain, its use will permit a reduction in the amount of morphine.

In some instances the occurrence of fibrillation is an indication for the administration of digitalis, but in many of these elderly

patients there is a digitalis-like effect without the use of the drug. With a fairly good myocardium quinidine, of course, is the drug of choice. However, quinidine is a cardiac depressant and most aged patients have a poor or failing myocardium. When heart failure complicates the picture, the treatment is the same as that for heart failure in any other patient, which is so well known that I need not go into it here.

Mental Symptoms

The most distressing developments of old age are the mental symptoms. In the past this branch of medicine has been very much neglected because of the belief that arteriosclerosis or senile atrophy was the sole and only cause of these symptoms. In recent years study and observation have shown that we must take into consideration other possible factors, such as toxic conditions due to an excessive use of sedative medication, operations, trauma, infections, emotional disturbances, etc.

Clow analyzed 100 cases of psychosis accompanying cerebral arteriosclerosis in persons over 60 years of age. It was pointed out that the past history seemed to be important in that 61 of the patients were, in adult years, more than ordinarily tense. Fifty of them were described as having an unusually narrow range of interest. A large proportion of them made notably poor sexual adjustments; 33 showed maladjustments ranging from frigidity to promiscuity and psychopathic behavior. Emotional disturbances were frequently a factor in upsetting the limited adjustment of the person with cerebral arteriosclerosis and precipitating a psychosis. A diagnostic breakdown showed that 34 patients had delirium as the presenting clinical picture, 19 agitated depression, 18 mental confusion, 4 depression, 5 manic-like states, and 4 paranoid states. Only 14 patients presented deterioration as the most prominent feature.

Of these 100 patients 11 recovered, 12 were much improved, 31 improved, 30 did not improve, and 16 died. Forty-nine patients were able to return home. Treatment consisted of psychotherapy and general medical treatment. None of the patients were treated with any of the more drastic modern procedures.

The physician who studies these cases with an open mind cannot help but conclude

that pathologic conditions such as senile dementia and arteriosclerotic psychosis are not the sole causes for mental disorders of older people, but are factors in the total etiology in that they lower the adjustability of the whole organism and its physiologic processes, thereby making it easier for the various types of psychosis to develop.

Certain measures are necessary in the management of these patients, irrespective of the cause of the mental disorder. In the early stages of the psychoses of old age the patient may commit serious errors of judgment before his irresponsibility has been recognized. He may make unjust alteration of a will or poor financial investments. Early diagnosis is important for the protection of both the patient and his relatives. From a psychiatric standpoint, the treatment of aged individuals revolves about Bleuler's interesting observation: "Senility often becomes a disease only as the result of the sudden cessation of ordinary attractions of life." Towards the senile person the physician's principal responsibilities are those of (1) cheerful encouragement and (2) regulation of habits and diet. The diet should be well balanced, and adequate amounts of vitamin B should be supplied. In arteriosclerotic conditions, reduction of salt intake should be encouraged. Alcohol is especially contraindicated. Sedation is a problem. Warm baths and warm drinks at bedtime are preferred to drugs. If sedatives are imperative the rapidly acting barbiturates are the drugs of choice, since they are quickly eliminated. Dilaudid in small doses has served me well in these cases.

Diabetes

Great interest is attached to the trend of mortality from diabetes because it is the one disease of the middle aged and elderly for which an effective means of treatment has been discovered. Yet the mortality rate from this disease is not declining. The rate in 1900 was 9.7 per 100,000 estimated population; in 1919 the rate was 14.9; in 1938 it was 23.8. The increase in the mortality from diabetes has taken place in spite of two important advances in the treatment of the disease—proper management of the diet and the use of insulin. This increase is based probably on better diagnosis as well as on an actual increase in the number of persons who have developed the disorder. Population

age shifts have also played a part. An increase in certain foreign race stocks particularly susceptible to the disease, especially Hebrews, is another factor contributing to the increased mortality. Scientific investigation on the etiology of the disease has indicated that there are two factors of importance—heredity and obesity. The gradual increase in the number of persons who can command luxuries in food and drink has led to a greater number of overweight persons in the population.

The prevention of diabetes hinges primarily on education. Since the obese persons is the most likely candidate for the disease, the maintenance of proper weight must be stressed. Those with a diabetic family tendency particularly should be taught to avoid habits conducive to the development of the disease. Such persons should be warned against permitting the marriage of their offspring into families with the same predisposition.

The diabetic himself must be taught to guard against the development of acidotic coma and infections of the feet, hands, and other parts of the body. The arterial changes in the elderly diabetic which interfere with normal circulation contribute to the development of gangrene, which is an ever present threat to the senile diabetic. The type which seems most hopeless is that in which there is pain, with no history of injury or accident to the foot. The pain arises from the tissue ischemia and its severity becomes a measure of the ischemia. In these cases early amputation is advisable. There are other types of gangrene which present a more hopeful picture. In these cases the lesion follows an accident. There may be no pain but some swelling. The patient is surprised sometimes to find the toe discolored. The pathology in these cases is different and conservative treatment often brings about a happy result.

Digestive Disturbances

Digestive disturbances are common in the aged. Many of these disturbances are due to diseases outside of the alimentary tract—as, for example, cardiac and renal diseases, and arthritis. These conditions occur frequently in old age, and may be the cause of many symptoms referable to the gastro-intestinal tract.

The physiologic changes in the gastro-intestinal tract resulting from the aging process are not very well understood and

the disturbances are so diverse that only certain general conditions can be taken up here.

The problem of mastication in the aged often brings about a radical change in the diet, making it high in carbohydrates and low in protein. While drastic dental surgery is to be avoided as much as possible, I am advocating properly fitted dental plates so that these individuals may eat vegetables in sufficient quantities. This, with the aid of mineral oils and enemas, will eliminate catharsis for the fecal impaction and constipation so common to senility.

The burning, dry, glazed red tongue so often encountered in the aged may be due to lack of fluids, diminished salivary secretions, achlorhydria, pernicious anemia, or vitamin deficiency, and much consideration is needed for proper selection of therapy.

Pneumonia

All of us are acquainted with the oft-quoted dictum of Osler, "Pneumonia may well be called the friend of the aged." Taken off by pneumonia in an acute, short, and relatively painless illness, the old escape those "cold gradations of decay" that so often make the last days of life a burden. Though modern methods of treatment have achieved a remarkable decrease in the mortality of pneumonia, the "pneumonia of the aged" continues to show a death rate much out of proportion to the reduction in mortality in the whole group of pneumonias.

In brief the following measures should be employed:

1. The use of the sulfonamide group of drugs, with due regard to their toxicity.
2. Serum treatment early, if typing of the sputum reveals a type amenable to specific treatment.
3. Oxygen.
4. Digitalis, especially in the presence of congestive failure, as pneumonia is often the result of this condition.
5. Measures to control cough and pain and secure adequate sleep.
6. Rectal tube enemas, and possibly mild catharsis, to relieve the abdominal distention.
7. Adequate food and fluid, along with such drugs as caffeine, strychnine and coramine, for supportive treatment.

Surgery

Old age is not a contraindication to

surgery. With proper preoperative preparation, proper selection of anesthetic and anesthesiologist, good surgical judgment, gentleness in handling tissues, and with such measures as oxygen therapy, insulin and glucose, and blood transfusions at our command, surgery in the aged patient involves no great risk. The many improved diagnostic aids at our disposal enable us to decide much more accurately the optimum time for surgery. Still we must exclude two classes from the benefit of elective surgery: the patient with congestive failure, and the patient with a recent myocardial infarction. Except in these two classes surgery in the aged has produced better than expected results and has saved many an individual from years of suffering and invalidism.

Conclusion

In these individuals who have passed beyond the sixth or seventh decade of life drastic measures of all kinds are to be avoided. Today we are more Wassermann conscious than ever before. If the senile patient has stood positive serology over these many years, be cautious. Syphilitic tissue is better than no tissue at all.

Remember that the ordinary symptoms of disease are often vague, indefinite or absent in the aged. Pain is often negligible. Temperature rises to lower levels and vomiting occurs infrequently.

Above all else the physician must have an understanding sympathy, patience, tact and respect for these old individuals.

Abstract of Discussion

Dr. J. M. Northington (Charlotte): I would like for all doctors to look upon all old persons as their parents or at least their foster parents. Undoubtedly it is largely through our efforts that the average span of human existence has grown longer and longer and largely through our efforts that we will have a larger and larger percentage of our total population among those that we call aged.

I dare say that after a while the level at which we begin to call people aged will be advanced, because this is a relative thing. It was generally accepted thirty or forty years ago that a man past 50 or 60 with hernia, single or double, was going to die soon anyhow, and that it would be subjecting him to unreasonable risk to operate. Early in my medical experience, I saw a very sensible man past 70 who had been carrying a hernia for twenty years, on the advice of his physician, decide that he wasn't going to carry it any longer. He had this repair made, returned his intestine to his abdominal cavity where it belonged, and got along happily for another ten years. He said his only regret was that he hadn't done it before in spite of the advice of his family physician.

Hemorrhoids, real and alleged, are another con-

dition which afflicts a great number of old persons. Of course, the first thing to do is to determine whether this condition is malignant, but even if it is not malignant, in the vast majority of instances it should be corrected, and can be corrected with almost mathematical accuracy. It will not jeopardize life, and it will add to the joy of living.

Certainly the important thing is not how many days we live, but how much we live. I will conclude by making a reference to my own father. My father lived to be 78 years old, the oldest Northington I have ever heard of. He died on Sunday morning. On the previous Tuesday morning, he went on a forty-mile fishing trip against the advice of one of those people who think the important thing is to live always, and that all those things you enjoy will certainly shorten your existence. He remarked to this person, "So far as I know, it is just as straight a road from Slade's pond to Heaven as it is from my house or any church or hospital." I would like to leave that idea with you for the minds of your patients. What reason is there for prolonging an existence if you give up everything you love to do so?

I appreciate the invitation to speak, and I trust that every member of this section will take to heart what Dr. McMillan has so well said.

Dr. W. T. Rainey (Fayetteville): I want to thank Dr. McMillan for bringing this subject to our attention. I think that most of us rather neglect the care of the aged, and if the predictions of statisticians are true, the next generation will have quite a few of them to handle. It is very timely to bring this subject to our attention.

SOME OF THE PROBLEMS OF ANTE-NATAL CARE IN NORTH CAROLINA

A. W. MAKEPEACE, M. D.

CHAPEL HILL

North Carolina has had for years a state-wide program, the purpose of which is to offer many of the women in the state advice and assistance during pregnancy. The people of the state may be justly proud of the progress made by their State and County Boards in the field of maternal care. Let us, however, dwell for a moment not upon past achievements, but upon some of the needs of the future. Are these maternal programs and clinics accomplishing their purpose or do further advances need to be made?

From the educational viewpoint there is still much to be accomplished. The need is twofold; for not only does the public need to be made aware of the existence and value of antenatal clinics, but unfortunately the physician frequently must be convinced that competent care is not a pure waste of time. A respectable maternal mortality figure cannot be achieved until both the patient and

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the physician realize the importance of antenatal care throughout pregnancy. The patient must be taught to report to her physician before the end of the first trimester, and preferably as soon as she realizes that she is pregnant. The physician must be willing to give this patient adequate care when she comes to his office and to remonstrate with those who report late in their pregnancy. By this means he can accomplish much toward having the women in the community ask for antenatal care early in their pregnancy.

Throughout the state there exists a serious problem in the matter of getting the clinic's services to the indigent patient. It is somewhat futile to teach the patient to value antenatal care if she is unable to attend the clinics. Before one can say that adequate service is offered, the problem of transportation must be solved. In some way the patient must be brought to the clinic or the clinic brought to the patient. Undoubtedly in certain regions a mobile unit could be utilized to great advantage. Elsewhere the terrain would perhaps make such a plan impracticable, and the patient would have to be brought to the clinic. There might be myriads of difficulties to overcome before such a program could be put into action, but there exists in North Carolina today a splendid school transportation system. These buses stand unused from 8:30 a.m. to 3:00 p.m. Possibly they could be utilized to bring to the clinic the patient who otherwise could not get there. If it is important to get the child to school, it is just as important to ensure a healthy child who will be able later to go to school. This suggestion may be impossible, impracticable and valueless, but if so, some other must be made and put into use.

The personnel in many of these prenatal clinics is far from adequate. It is obvious to all that one physician alone cannot handle 40, 50, or at times, I have been told, even 60 cases in an afternoon. In some counties this problem could be solved by obtaining the assistance of more of the physicians in the community. In communities where there are physicians available and needed, and yet not helping, it would seem that the problem has not been properly presented. However, in communities in which each physician is giving from two to four afternoons a month to public health clinics some other method of staffing clinics must be considered and

worked out. It seems to me that a determined effort should be made to interest and get into the clinics the specially trained men of the medical community. Their knowledge and methods would be of great help to the man doing general work, and they would also be available as consultants. Both men, the specialist and the general practitioner, however, should cooperate in running the clinic in order that the burden would not be too great upon either, and also that each may see and learn of the other's problems and observe how they may best be solved.

The question of the routine to be followed in the antenatal clinics is a rather difficult one. I believe that there should be a minimal routine which should be followed in every case. It is recognized and accepted by obstetricians throughout the country that certain procedures should be carried out in the examination of every pregnant woman in order to protect her from possible catastrophe during her prenatal course or at delivery. We will not go into the details of these procedures at this time, but I believe that the basic principles should be considered, accepted and put into force. Naturally, any expansion of the basic routine would always be permitted.

Let me say a few words now about the general attitude towards antenatal clinics as I have observed it. The monthly antenatal clinic is such a great advance over no care at all that this achievement seems to act as a definite brake upon the speed of further progress. Certainly from all sides one gets the impression that commendable work has been done (which of course is absolutely true) and therefore enough has been accomplished for the time being. In certain places it is the general belief that a visit once a month is all the load that can be carried, and that it will be impossible to get either the physician or the patient to accept more frequent visits. This is represented to be all the more true since until just lately no care at all seemed quite adequate.

Virginia thought five years ago that public health antenatal clinics were impossible. They are now spread throughout the state. North Carolina now thinks antenatal care for the indigent, on a par with that available to the private patient, is also impossible. It is and it will be so until the value of preventive medicine in obstetrics is accepted. Antenatal care is almost wholly preventive

medicine. The great majority of women come to the physician well and it is primarily his duty to keep them so. Too often because there is little to cure, there is little interest shown. The principal pitfalls of pregnancy—toxemia, infection and hemorrhage—can be avoided by preventive methods. And yet it is these three factors that are killing our women. Antenatal care should also include proper attention to existing disease or abnormality—tuberculosis, diabetes, syphilis, heart disease, and the abnormal or small bony pelvis which may cause disproportion at term. Such abnormalities may and often do require some modification of the usual conduct of the antenatal period, but when they are properly handled pregnancy may still terminate successfully, a well mother and a healthy baby being the outcome. That such an outcome is the natural result of careful supervision during the antenatal period must be driven into the minds of everyone—the patient, the public health service, and the individual physician. The following table shows the maternal mortality for the United States registration area at large and for North Carolina:

Maternal Deaths per 10,000 Live Births			
Year		U. S. A.	N. C.
1930	- - - - -	67	84
1935	- - - - -	58	70
1938	- - - - -	44	56
1939	- - - - -	40	50

Idaho had the best maternal mortality figure for the country in 1939, with 22 deaths per 10,000 live births.

The figures of the Bureau of Vital Statistics of North Carolina for 1939 show the following chief causes of maternal deaths:

Cause	Percent, of Total Deaths
Toxemia	29
Infection	19
Abortion	6.6
28 weeks or more	12.4
Hemorrhage	12
Total	60

Almost every one of these deaths is needless. At least 60 per cent of the deaths during pregnancy therefore can and should be avoided. It would seem that we still have to learn a part of our lesson here in this state.

The job is only partly done when a patient is carried successfully to the end of her antenatal period. Unless she receives equally good care during delivery and in the postpartum period all the value of the previous nine months of care may be undone in a few hours' time. At present and for some time

in the future it will be impossible to supply hospital beds for all pregnant patients. The financial problem of building and maintaining adequate facilities is too much to consider now, and will be, perhaps, for a generation. Some time in the future small hospitals must be placed in strategic spots throughout the state to serve communities at present without such facilities.

While we are waiting for such a happy state of affairs, however, a definite plan should be evolved for more effective use of the hospital space now available. Large home delivery services are conducted by many of our medical schools. The women are delivered in the home by a relatively untrained individual, a third or fourth year medical student. In spite of home delivery, and the deficiencies of the accoucheur, the records of such services are excellent. Morbidity is low and mortality practically non-existent. This excellent record is made possible by means of a very careful sifting of patients in the antenatal clinic. Only normal cases are left for delivery in the home. All other cases are referred for delivery in the hospital. Such a plan functions well because, first of all, abnormalities are not handled in the home; and second, adequate consultation is available in cases in which the decision is not at once clear. Such a plan might be applied in the State maternal clinics. A plan for rendering the consultative service would have to be worked out. Perhaps it could best be handled by referring the patient to the hospital for one antenatal visit. At this visit the obstetrician would see the case, decide whether the opinion of the general practitioner in the clinic was correct, and determine whether the patient should have a hospital delivery. Should such a consultative service and hospital delivery be available *particularly* for the woman with toxemia, a small pelvis, bleeding, or the record of a previous stillbirth or baby injured at birth, the maternal and fetal mortality rates would immediately show great improvement.

A plan similar to the one outlined above would require close cooperation between welfare agencies, county commissioners, hospitals, obstetricians, local health officers, and general practitioners. At first there might be difficulties, friction, misunderstandings. However, I believe that such a plan would in the long run tremendously benefit a community, and would make all efforts to get it into action well worth while.

Abstract of Discussion

Dr. G. M. Cooper, Assistant State Health Officer (Raleigh): Dr. Makepeace's paper is full of suggestions which are pertinent to the problem of maternal and child health work. Dr. Makepeace suggested the use of school buses for transportation. We tried for several years to get the school authorities to let us use the school buses for the transportation of children to preschool clinics. There has been a legal obstacle to that, and we have not been able to do it. As Dr. Makepeace says, however, that might be worked out in time.

In my judgment the most feasible plan is the one we are now following: to marshal all the forces we can and try to get these women to the clinic as early in their pregnancy as possible. I think the county health officers and nurses in the state have done a wonderful job. In the past year (1940) 15,293 women came for medical examination for the first time. Compared with about 10,000 the previous year, that is an increase of 50 per cent in the number of women examined. If we get more extensive help from a larger group of physicians (although more than two hundred of them are helping us throughout the state), with the help that Duke is giving us now, we can distribute the load so that one doctor will not have too many patients to attend to at one time.

Miss Dalton (Winston-Salem): I should like to tell you about our plan in Forsyth County for this work. In the last three years we have had an average in the community hospital of around 300 indigent mothers each year, with only one maternal death. If these mothers do not come to our clinics they have to pay \$15 for the delivery. So our county nurses get all these cases into our clinics, and they are delivered in the hospital. We also have the aid of the Jewish Women's Council, which gives our layettes. The Presbyterian Women's Circles also make layettes. We are trying to make all mothers realize that layettes are necessary.

Dr. J. R. Hege (Winston-Salem): Before the State took over the school buses in North Carolina we had an arrangement worked out with the local board of education to bring the prenatal cases in to the clinic, which we held at that time somewhere near the school buildings. It was not necessary to have the buses make two trips, to get the mothers in and back. With a 2 o'clock clinic the buses would go out about 1 o'clock to collect the mothers and bring them in. They would go home on the same buses with the children. It was a very practical plan.

At the present time our preschool children are coming with their brothers and sisters on the school buses. There is no extra driving done. The teacher of the first grade gives a party on the registration day, and they come to register and have their preschool examination. I hope the school officials will not consider that a violation of the law, because we do not want that practice stopped.

Adequate prenatal service is not always available through the family physician. I think Dr. Cooper has done a great deal of good in supplementing our budgets to aid the local physicians in holding these clinics. The value of the work lies not solely in what the physician does in that prenatal clinic, but also in the fact that he himself gets a little education. He starts off poorly, and in a few months he is giving the clinic good prenatal service and also is giving his private patients better prenatal service.

Dr. A. D. Gregg (Henderson): It is necessary to educate our midwives and nurses to get these pre-

natal cases to the clinics or to the doctor in time. In my county the patients are sent to my office for a blood test by the midwives. Very few come before the sixth or seventh month. We must educate the midwives to look up their prospective patients and get them to the doctor in time to do some good.

I might say that in our county, also, the school buses bring the children to the preschool clinic.

ACUTE PERFORATION OF PEPTIC ULCER: A STUDY OF THIRTY-NINE CONSECUTIVE CASES*

N. P. BATTLE, M. D., F. A. C. S.

ROCKY MOUNT

During the ten year period from 1931 to 1941 there were 23,410 admissions to the Park View Hospital. Of this number, 120 patients, or 0.5 per cent, were diagnosed as having peptic ulcer. A comparison of this figure with the incidence of 0.85 per cent reported by Thompson^(1a) for the Philadelphia General Hospital indicates that the great majority of the peptic ulcer patients in this community not requiring surgery are treated at home by their family physicians. Cases of perforated ulcers made up 0.16 per cent of the total admissions, however, in both series.

While 20.8 per cent of our 120 peptic ulcer cases were in females, there were no acute perforations among these. The American statistics reviewed⁽¹⁾ indicate that approximately 96.2 per cent of perforated peptic ulcers occur in males.

Twenty-six, or 66.7 per cent of the acute perforations occurred among the white patients, and 13 or 33.3 per cent among the Negroes. Of the total colored admissions, 0.72 per cent were for peptic ulcer. Perforation occurred in 39.4 per cent of these cases. Of the total white admissions 0.45 per cent were for peptic ulcer. The incidence of perforation in the white patients was 29.8 per cent.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

* The patients in this series were operated upon by Drs. E. S. Boice, B. C. Willis and N. P. Battle, the surgical staff of the Boice-Willis Clinic, Park View Hospital.

1. (a) Thompson, H. L.: Acute Perforation of Peptic Ulcer. *Surg., Gynec., and Obst.* 61:863 (May) 1937.
- (b) Ellis, L. S.: Perforated Peptic Ulcer; Analysis of 100 Cases. *Ann. J. Surg.* 41:427 (September) 1958.
- (c) Morrison, W. R.: 200 Acute Perforated Ulcers of the Stomach and Duodenum from the Boston City Hospital, New England J. Med. 213:447 (September 5) 1935.

From table 1 it will be seen that the greater number of perforations occur in patients below the age of 41.

TABLE 1

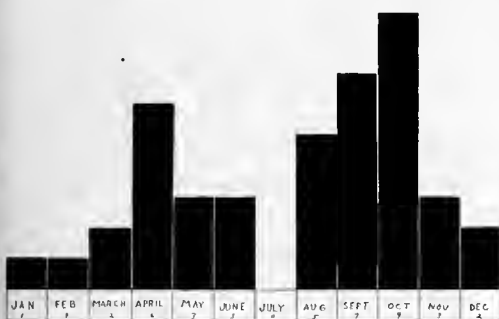
Age Incidence in 39 Cases of Perforated Peptic Ulcer

15-20 years	8	31 cases under 40 79.5%
21-30 years	13	
31-40 years	10	8 cases over 40 20.5%
41-50 years	4	
Over 50 years	4	

At the Philadelphia General Hospital^(1a) 85 per cent of the perforations occurred between the ages of 30 and 60. The Boston City Hospital^(1c) reported that there were more perforations between the ages of 35 and 45.

Of the 39 perforated ulcers in our series, 36 were duodenal and 3 pyloric. The 3 pyloric ulcers were so classified because deformity and induration made a more exact classification impossible. None of the ulcers were situated posteriorly.

Twenty-seven of the patients (71 per cent) were engaged in an occupation requiring active work. Eighteen of these were farmers. The seasonal incidence of perforation in our series is considered in figure 1.



SEASONAL INCIDENCE PERFORATION

Fig. 1

Fallis^(1b) at Henry Ford Hospital in Detroit found that 33 per cent of the perforations in his series occurred during the summer and that 15 per cent occurred in June.

A correct preoperative diagnosis was made in 81.5 per cent of the Boice-Willis Clinic series. This percentage is comparable to those reported by Fallis^(1b) (88 per cent) and Morrison^(1c) (77.5 per cent). In the cases diagnosed incorrectly, appendicitis was the most frequent diagnosis. A preoperative diagnosis of appendicitis was made in 5

cases. Perforated ulcer was confused with acute cholecystitis in two instances. A moribund case was diagnosed as acute pancreatitis. Only one error in diagnosis was made in cases seen during the first six hours after perforation, the others occurring in cases seen in the reaction period. A history of sudden, agonizing pain, with a previous history of indigestion, associated with generalized abdominal rigidity or upper abdominal rigidity and tenderness was considered sufficient justification for a preoperative diagnosis of acute perforation of peptic ulcer. Only 2 patients of this series, one of whom was moribund on admission, were seen in shock. It is probable that some of the patients had recovered from shock before admission to the hospital, as only 8 patients were seen during the first six hours. White and Patterson⁽²⁾ are of the opinion that "the shock so often emphasized in the textbooks as one of the characteristic features in these cases is not a true surgical shock." Leukocytosis did not appear to be of diagnostic significance because of its variability. In the fatal cases the leukocyte count ranged from 3,600 to 27,200. The temperature and pulse rate were too variable to be of diagnostic aid. Of the 14 cases examined by fluoroscope, only 6 showed positive evidence of gas beneath the diaphragm. In this series the decision to operate was not influenced by negative fluoroscopic findings or by failure to demonstrate the "absence of liver dullness." Mooney⁽³⁾ is of the opinion that the most typical symptoms of perforated peptic ulcer are "sudden onset of epigastric pain and bilateral tenderness on rectal examination."

In only one patient in this series did perforation occur without previous symptoms of ulcer. Eight more patients had symptoms of two weeks' duration or less. If all 9 cases are considered as having no appreciable previous ulcer symptoms, the incidence of 23 per cent is comparable to those reported by Morrison (25 per cent) and McCreery⁽⁴⁾ (19.1 per cent). Fallis, however, reports an incidence of only 11 per cent of perforations occurring without previous symptoms.

Saline solution, with or without 5 per cent glucose, was used preoperatively and during the operation, when indicated. The duodenal

2. White, W. C., and Patterson, H. A.: Late Results of Simple Suture of Acute Perforated Duodenal Ulcer, *Ann. Surg.* 94:212 (August) 1931.

3. Mooney, J., Jr.: Atypical Signs and Symptoms in Perforated Peptic Ulcer, *South. Surgeon*, 9:179 (March) 1940.

4. McCreery, J. A.: Perforated Gastric and Duodenal Ulcer, *Ann. Surg.* 107:350 (March) 1938.

tube was inserted preoperatively in some of the cases. Either a right rectus or a right paramedian incision was used in this series. Wound disruption occurred in 2 cases in which a right rectus incision was used. Fallis⁽¹¹⁾ advocates a midline incision on the grounds that the operating time is reduced and that there is less tissue loss in infection because the fascial spaces are not opened. Hartzell and Sorock⁽⁵⁾ prefer a short transverse incision at a point about 5 cm. below the costal border, starting in the midline and extending to the right, and they present very convincing reasons for this preference. Leakage and free fluid were removed by suction and sponges.

The types of operations performed and the number of times that they were used are shown in table 2.

TABLE 2
Treatment

	Cases	Deaths
Simple closure	20	4
Excision	6	0
Excision and pyloroplasty	11	0
Not operated upon (moribund on admission)	1	1
Simple drainage (walled off abscess)	1	0

Where "simple closure" was used, the technique consisted of closing the perforation by one of several recognized procedures, and covering the site with omentum. In the perforations treated by simple excision, the ulcer, with a variable amount of indurated tissue, was excised in the longitudinal axis of the gut and closed in the transverse axis, with the use of three layers of intestinal catgut sutures when possible. Omental reinforcement was used in all of these cases. When pyloroplasty was used in addition to excision, the technique was the same as that described above except that the elliptical excision was carried through and beyond the pyloric sphincter for a short distance. It will be noted that no gastro-enterostomies were performed in this series. Most of the cases (table 2) were treated by simple closure. All of the poor risks were included in this group. Lahey⁽⁶⁾, and others of wide experience, feel that the procedure of choice in the treatment of this condition is simple closure.

In the cases diagnosed as appendicitis the

abdomen was opened first through a McBurney incision. When there was doubt as to the diagnosis, the abdomen was opened through a right rectus incision that was low enough to permit examination of the appendix. Appendectomy in addition to an operation for ulcer perforation was performed in 11 cases.

From table 3 it will be seen that in over half of the cases drainage was not employed.

TABLE 3
Drainage

	Cases	Deaths
Not drained	21	1
Drained	17	3
Perforated:		
1-6 hrs.	1	0
6-12 hrs.	3	0
12-24 hrs.	6	2
More than 24 hrs.	7	1

When used, the drains were brought out either suprapubically or through a stab wound to the right of the incision, or in both places. It was felt that the question of drainage depended upon the time elapsing between perforation and operation, and, to some extent, on the appearance of the peritoneum.

During the more recent years intravenous saline solution with 5 per cent glucose and Wangenstein suction were used postoperatively when indicated. Earlier in the series subcutaneous fluids and gastric lavage were used.

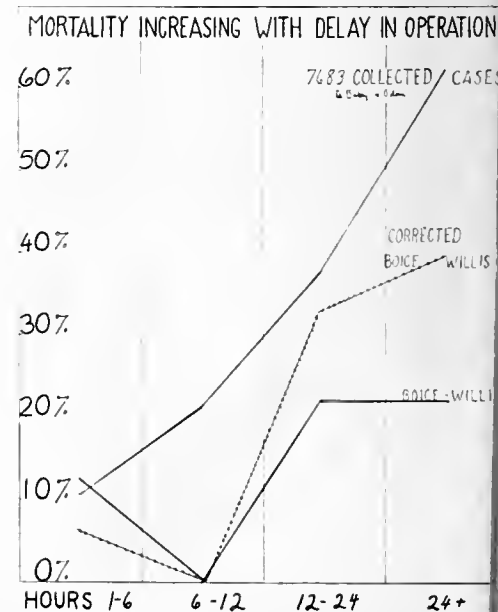


Fig. 2

5. Hartzell, J. B., and Sorock, M. L.: Acute Perforated Peptic Ulcer, *Surz., Gynec., and Obst.* 69:668 (November) 1939.

6. Lahey, F. H.: Peptic Ulcer, *Pennsylvania M. J.* 41:79 (November) 1937.

Early operation following perforation is the most important death-reducing factor in the treatment of this condition. In a series of 7,683 cases of perforated peptic ulcer collected from the literature by DeBakey and Odom⁽⁷⁾, it was shown that the mortality increased in proportion to the period of delay (fig. 2). I am of the opinion that, while this observation is correct, the quantity and quality of the leakage and the age of the patient are important factors (tables 4 and 5, and fig. 3).

TABLE 4

Amount of Free Fluid

	Cases	Deaths	Mortality
None	5	0	0
Small amount	7	0	0
Moderate amount	8	0	0
Large amount	15	4	26.7%
Not stated	4	1	8.3%

TABLE 5

Character of Free Fluid

	Cases	Deaths	Mortality
Bile stained	7	0	0
Cloudy	12	1	8.3%
Flaky	7	2	28.5%
Purulent	4	3	75.0%
Not stated	8	0	0

In the Boice-Willis Clinic series the perforations were found to be sealed over in 8 cases at the time of operation. The time interval between perforation and operation varied from 2 hours to 5 days. None of these patients died. The mortality rate was corrected by placing those cases found with sealed perforations in the group operated upon within the first six hours (fig. 2). The low mortality rate in this series is probably due to the fact that 71 per cent of the perforations occurred in people under 40, and 51 per cent occurred in people under 30.

The mortality according to race is shown in table 6.

TABLE 6

Mortality According to Race

	Cases	Deaths	Mortality
White	26	1	3.8%
Colored	13	4	30.7%

Recurrence According to Race

	Cases followed	Recurrences
White	23	39.1%
Colored	7	42.8%

The death rate for white patients alone was only 3.8 per cent. Garver⁽⁸⁾ in reporting a

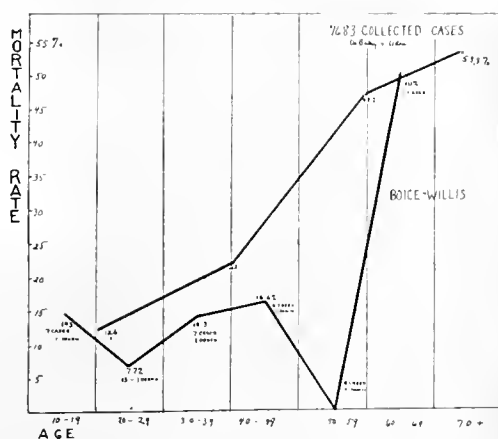


Fig. 3

series of perforations in Negroes gave an uncorrected mortality of 20.9 per cent.

The chief cause of death after perforation was peritonitis. Of the five deaths, four were in patients who were operated upon. In three of them purulent free fluid was found at the time of operation. Generalized peritonitis was demonstrated at autopsy in the case not operated upon, and in 2 cases after operation.

The postoperative complications are shown in table 7.

TABLE 7

Complications

	Cases	Deaths
Wound infection	8	0
*Wound disruption	2	1
Pneumonia	2	0
Atelectasis (after ether)	3	0
Subhepatic abscess	1	0
Subdiaphragmatic abscess (perforating into pleural cavity)	2	0
General peritonitis	5	5
*Intestinal obstruction	1	1
*Urea retention	2	1

* In addition to general peritonitis.

The statistics of the late results in this series (table 8) are based on replies to questionnaires, except for seven personal interviews. All of the cases with a complaint of digestive symptoms were classified as recurrences.

TABLE 8

Late Results in 30 Patients Followed Since Operation

	Cases	Percent.
Cured	14	46.7
Well 5 or more yrs.	2	6.7
Well 3-5 yrs.	1	3.3
Well 1-3 yrs.	4	13.3
Well 6-12 mos.	2	6.7
Well 1-6 mos.	1	3.3
Never relieved	6	20.0

7. DeBakey, M., and Odom, C. B.: Significant Factors in Prognosis and Mortality of Perforated Peptic Ulcer, South. Surgeon 9:425 (June) 1940.

8. Garver, C. C.: Forty-three Perforations in the Negro, 1928 Year Book Gen. Surg., p. 375; J. M. A. Georgia 27: 273 (July) 1928.

The percentage of recurrences is shown to be unusually high when compared with the results of the authors shown in table 9.

TABLE 9

Comparison of Late Results in Different Clinics

	Percent. of cases followed	Percent. of recurrences
Ford Hospital	69.0	36.3
Boice-Willis Clinic	88.2	53.3
Lewisohn		39.0
Bellevue	87.0	20.3

Table 10 shows the effect of the different types of operation on recurrences.

TABLE 10

Effect of Operation on Recurrence

	Cases followed	Percent. of recurrences
Simple closure	15	53.3
Excision of ulcer	5	40.0
Pyloroplasty	9	66.7
Simple drainage	1	0

Abstract of Discussion

Dr. W. S. Hester (Reidsville): Dr. Battle has discussed the subject of perforated peptic ulcer thoroughly, and I only want to mention the method we employ. I have had 26 cases of ruptured ulcer in my experience, with three deaths. In practically every case where the condition of the patient was not too poor, we have done a posterior gastro-enterostomy, and have had very good success with it. Recurrences have not been quite so frequent as in Dr. Battle's series, so far as I have been able to keep up with them.

I notice Dr. Battle's mortality in colored people is high. Two of the deaths in my series were in Negroes. All my cases were men.

Dr. A. T. Patton (Siler City): I should like to emphasize the possibility of confusing rupture of a peptic ulcer with appendicitis. I was called to see a man about 33 years old, who was taken sick on a Friday night with "bellyache", he said. When I saw him on Sunday morning he had an acutely painful abdomen. There was no history suggestive of ulcer. Most of the tenderness was down in the appendix region, and, thinking he had appendicitis, I operated, using a McBurney incision. As I opened the abdominal wall some chocolate colored fluid came out. I found the appendix to be slightly inflamed, and I removed it and closed the incision. There was profuse drainage. I knew I had not gotten to the seat of the trouble. Two days after operation I gave him some methylene blue by mouth, and it came right out in the drainage. Two days later he died. His condition was too poor for a second operation. At autopsy I found a retroperitoneal ulcer. We seldom see a case like that except when there has been trauma.

Last summer I saw another case of perforated ulcer in a section where there had been a lot of spider bites. The doctors there held out for a diagnosis of black widow spider bite. I finally operated, after thirteen hours, and found a ruptured abdominal ulcer. This patient got well.

Dr. C. I. Allen (Wadesboro): I am especially in-

terested in what Dr. Patton has just said, because in a period of twenty-five years I have had similar tragedies in cases of duodenal ulcer. When you see these cases ten or fifteen hours after rupture of the ulcer, as one often does in a small hospital, it is hard to make the diagnosis. If you operate, thinking it is appendicitis, you may find fibrin around the appendix and inflammation. In two cases of ruptured duodenal ulcer I have taken out the appendix, thinking it to be the cause of the trouble, because of the fluid there. The point I want to make is that if there is cause to suspect ruptured ulcer, even in the presence of fibrin and an inflamed appendix, it is well to look further.

Two or three doctors who have brought me patients with perforated ulcers have said that they could not realize that the patient had anything serious the matter with him, because there was no change in the pulse rate. One of the characteristics of perforated ulcer is that in the early stages the pulse remains slow. After peritonitis develops, there is, of course, a very rapid pulse rate.

Dr. Donnell B. Cobb (Goldsboro): I should like to say just one word about the incision used to expose these ulcers. The cases we surgeons see have hemorrhage, perforation, or obstruction. I was interested to note that one-third of Dr. Battle's cases were of the perforating variety. We have used in the last several years, with the few perforating ulcers we have had, the high transverse oblique incision. As you all know, it is at times impossible, with the right rectus incision, to expose the duodenum without much packing and retraction; and of course this injures the peritoneum and makes it susceptible to infection. If the operation can be done without much manipulation or handling of tissue the patient has a better chance of escaping without infection.

We make the incision from just below the rib margin. If the liver edge is projecting we retract it upward, exposing the anterior surface of the duodenum. The great majority of these perforating ulcers are on the anterior surface. I notice that in all of Dr. Battle's cases they were on the anterior surface. Fortunately, I have not seen a case of retroperitoneal perforation such as Dr. Patton described.

I think the general use of this simple incision and simple operation probably will be one of the death-reducing factors.

Dr. R. L. Pittman (Fayetteville): Since the building program at Fort Bragg began, there have been between 10,000 and 17,000 people there at all times, the average at present being about 12,000. We have had five ruptured duodenal ulcers since October in these workmen.

We had one case in which there was rupture of the second portion of the duodenum from a smoke-stack's falling on the man's back. Another man had a pole fall on him, which ruptured the second portion of his duodenum. The peculiar interest in these two patients was the indirect force producing rupture of the duodenum.

If a man is in good condition and will stand gastro-enterostomy we perform gastro-enterostomy rather than pyloroplasty. If the man is over 60 we do a pyloroplasty and close the ulcer as best we can.

I think there is some risk in closing the ulcer, because it is liable to leak in a few days and cause the death of the patient. If the patient's condition is good I see no reason for not doing a gastro-enterostomy or pyloroplasty.

LYMPHOCYTIC MENINGITIS

ARCHIE A. BARRON, M. D.

CHARLOTTE

Lymphocytic meningitis probably occurs more often than is thought. It may be confused with other forms of meningitis, especially tuberculous or syphilitic meningitis, or with allied diseases of the central nervous system such as atypical encephalitis or poliomyelitis⁽¹⁾.

The case to be discussed presents the usual characteristics of lymphocytic meningitis (headache, stiff neck, nausea, vomiting, fever and a high lymphocyte count)⁽¹⁾, but it also has unusual features that appear to make it worthy of record. Outstanding is the fact that the patient had not one but two attacks, each attack having meningeal sequelae. In addition, the patient was found to exhibit signs of Marfan's syndrome (arachnodactyly), a familial disease.

It is probable that not all the cases referred to as lymphocytic meningitis, or benign lymphocytic meningitis, are caused by one etiologic agent⁽²⁾. Acute aseptic meningitis, or lymphocytic meningitis, was first recognized by Wallgren as a new clinical entity in 1925; and when Armstrong and Lillie in 1934 isolated a virus which produced the disease experimentally in mice and monkeys⁽³⁾, and used the name "lymphocytic choriomeningitis", it was at first assumed that the etiology of all the cases grouped under Wallgren's definition was established.

Since then, however, cases have been reported⁽⁴⁾ in which the virus or its antibody has not been found, so that it appears probable that the virus of Armstrong and Lillie may not account for all forms of lymphocytic meningitis. Perhaps it is best to group together all similar cases, variously described as acute lymphocytic meningitis, acute serous meningitis, benign idiopathic meningi-

tis, lymphocytic choriomeningitis, and epidemic meningitis serosa, under the general heading of lymphocytic meningitis and differentiate them only as their etiology is established. It may yet be shown that other viruses or infections, or etiologic agents as yet unsuggested play a part in some cases. In the present case, owing to an unfortunate misunderstanding, no search was made for a virus, and this must of necessity take its place under the general classification until there is proof of etiology⁽²⁾.

Lymphocytic meningitis is described as a benign, self-limiting inflammation of the meninges. Usually the first symptom is headache, which is invariably severe. This is followed by nausea and vomiting and a rise in temperature, which varies (to some extent) with the severity of the disease, but is usually not high. In most cases the neck becomes rigid and Kernig's sign is positive. Epileptic attacks, delirium and coma may ensue. In some cases nystagmus and papilledema develop. The course of the disease varies widely with regard to both severity and duration. The average duration of the illness, however, is from one to three weeks. Usually the disease is characterized by an acute onset, a benign course, and a decline by lysis.

Abnormalities of the cerebrospinal fluid generally correspond to the severity of the symptoms. In an average case the initial pressure and the protein content may be increased (the latter moderately), but the sugar and chloride content usually remain normal. This finding distinguishes lymphocytic meningitis from tuberculous meningitis. As a rule the colloidal gold reaction is normal. Sometimes a fibrin clot forms in the withdrawn fluid. A characteristic feature is an increase of lymphocytes.

Case History

G. H. had his first attack of meningitis at the age of 6 years. Headache, nausea, vomiting, stiff neck and a positive Kernig sign were present, and there was a low grade fever, the temperature not rising over 100 degrees. There were no outstanding neurological findings other than those mentioned. The eye grounds were normal, and Dr. Frank Smith, who made an ophthalmological examination, reported no disturbance of vision. The lungs were normal. There were a number of little sores and rather acute adenitis

Read before the Mecklenburg County Medical Society, Charlotte, November 4, 1941.

1. Cecil, R. L.: *A Textbook of Medicine*, ed. 5. Philadelphia, W. B. Saunders, 1941, pp. 37, 146, 1470.
2. Skogland, J. E.: "Benign" Lymphocytic Meningitis, *Minnesota Med.* 22:462 (July) 1939.
3. Armstrong, C. and Lillie, R. D.: Experimental Lymphocytic Choriomeningitis of Monkeys and Mice Produced by a Virus Encountered in Studies of the 1933 St. Louis Encephalitis Epidemic.
4. (a) Brown, J. J.: Lymphocytic Choriomeningitis with Isolation of Virus, *Ohio State M. J.* 37:146 (February) 1941.
(b) Silcott, W. L. and Neuburger, K.: Acute Lymphocytic Choriomeningitis, *Am. J. M. Sc.* 200:253 (August) 1940.
(c) Skogland, J. E. and Baker, A. B.: An Unusual Form of Lymphocytic Choriomeningitis, *Arch. Neurol. and Psychiat.* 42:507 (September) 1939.

in the groins, which was deemed to be the cause of the high lymphocyte count (20,000 cells). The patient appeared to be very much undernourished and showed some bony peculiarities, the significance of which, at that time, was not recognized.

The spinal fluid, during the illness, showed no increase in cell count, but was under slightly increased pressure. There were no significant changes in proteins and the fluid was clear. Repeated spinal fluid examinations for tubercle bacilli were negative and Wassermann tests were also negative. A diagnosis of serous meningitis was made. The spinal fluid drainage served to alleviate the symptoms as the disease ran its course.

After about a week all acute symptoms had abated. The patient was dismissed from the hospital and allowed to return home, to be kept under the observation of Dr. W. K. McGill, of Clover, South Carolina, by whom the patient had been referred.

As it appeared subsequently, the meningitis, in a sense, was not self-limiting. Some meningeal sequelae, in the form of headache and occasional rigidity, appeared at intervals for the next ten years. During this time the boy grew, not normally, but with an unusual elongation of the bones, especially of the hands and feet. He never had a well nourished appearance, owing to a lack of subcutaneous fat and undeveloped musculature.

At the age of 16, G. H. had another attack of meningitis heralded by headache, and he was again referred to the writer and placed in the Charlotte Memorial Hospital for investigation and treatment (Jan. 25, 1941). On this occasion his appearance was more striking than it had been ten years previously. He still looked undernourished and was poorly developed. He seemed critically ill but mentally sound. His physiognomy was peculiar, with prominent features, and he had extremely long fingers and toes (fig. 1) and a rachitic deformity to the right of the sternum. There was no apparent cardiac discomfort, and the diastolic sounds were of good quality. There was a "to and fro" friction rub at the apex. There were large right cervical nodes and shotty inguinal nodes. The liver, spleen and kidneys were not palpable. The genitalia showed hypoplasia. Kernig's sign was positive and there was a suggestive Babinski sign and general hypotonia. Superficial reflexes were present.



Fig. 1. Hands and feet of G. H. (aged 16).

Deep reflexes, though present, were of low amplitude.

The patient again manifested the ordinary symptoms of meningeal irritation but this time the eye grounds were so unusual that the findings could not be interpreted. Dr. Frank Smith, who had seen the boy in 1931 and reported the eye grounds negative, was called upon once more to interpret the findings. At this time he reported tremulous iris below in each eye. The fundi were difficult to see, because of refractive lenses, suggesting myopia. Dr. Smith reported ectopia of each lens, suggesting a diagnosis of Marfan's syndrome (arachnodactyly). This diagnosis proved to be correct.

It was open to speculation whether the two conditions (Marfan's syndrome and meningitis) could be linked together as cause and effect, or whether the simultaneous occurrence of these hitherto unallied diseases was purely coincidental.

Spinal fluid studies, which had been essentially normal during the acute attack in 1931, now produced some significant findings. There were 996 leukocytes, with 80

per cent lymphocytes; the protein content was elevated to 70 mg. per 100 cc., while the sugar was 80 mg.; and the gold chloride was 0000000000. The pressure was not increased.

Blood studies were not particularly significant. The leukocyte count was 12,000, with 14 per cent lymphocytes. A urinalysis showed a slight trace of sugar. The specific gravity was 1.026.

Instructions were given to make a laboratory examination for the virus of Armstrong and Lillie or its antibody, but the orders most regrettably were not carried out.

The high percentage of lymphocytes in the spinal fluid cell count at first suggested tuberculous or syphilitic meningitis, but as repeated examinations of the spinal fluid failed to show any tubercle bacilli, and spinal fluid Wassermann tests were negative (as in 1931), a diagnosis of lymphocytic meningitis was made.

Spinal fluid drainage, as before, appeared to alleviate the headache, and the patient made an uneventful recovery from acute disabling meningeal symptoms, his spinal fluid returning to normal.

Treatment consisted largely of high caloric diet, vitamins, and concentrated cod liver oil.

Discussion

The second illness of the patient here discussed has all the characteristics of that acute, benign disease of the central nervous system known as lymphocytic meningitis. The first attack lacked the high lymphocyte count. Both attacks were atypical in that there were meningeal sequelae.

It is conceded that some more or less chronic symptoms, chiefly headache, may have been due to visual disturbances; nevertheless the fact remains that this patient had two very definite acute attacks of meningitis.

While some cases of lymphocytic meningitis may be attributed to the virus of Armstrong⁽³⁾, it has been suggested that a variety of etiological agents may bring about this condition⁽²⁾. In this particular case lymphocytic meningitis was found in association with Marfan's syndrome (arachnodactyly), a familial disease which had characteristically influenced the development of the patient's bony structures and musculature⁽⁵⁾.

and finally, in the lapse between his 1931 and 1941 attacks of meningitis, his eyes.

Although previous workers who on rare occasions suggested that Marfan's syndrome might conceivably affect the nervous system or its development⁽⁶⁾ have met with opposition⁽⁵⁾, and the theory has never been proved, it is difficult to escape the thought that in the case discussed the two conditions of Marfan's syndrome and meningitis might be linked together. Autopsy findings in such a case would be extremely instructive. Further discussion of the syndrome known as Marfan's and its possible effect upon the central nervous system will follow in a later paper.

6. Moro: Ueber die Neurologischen Form der Arachnodactylie, Muenchen Med. Woch. 74:1071, 1940.

THROMBOPHLEBITIS: TREATMENT BY NOVOCAIN INJECTION OF THE SYMPATHETIC NERVES

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WINSTON-SALEM

In April of 1940 my attention was called to the dangers attendant upon the complication of thrombophlebitis by the extremely serious condition of a patient I had operated upon. Her response to novocain injection of the lumbar sympathetics, and the response of other patients subsequently treated by this method led me to a study of the recent work which has been done on the subject. I shall review this work briefly and report the results obtained in 9 cases of my own.

Incidence

The incidence of thrombophlebitis varies greatly in different reports. Ochsner reports an incidence of .6 per cent in a series of 133,458 operations⁽¹⁾, while 24 per cent of the patients in a series of 2613 autopsies at the Wisconsin General Hospital were thought to show evidence of thrombosis.

This condition is believed to be on the increase. Among the explanations which have been offered for this fact is increased life expectancy, with subsequent survival of more people susceptible to thrombophlebitis. Ochsner thinks that the more widespread

Read before the Forsyth County Medical Society, Winston-Salem, October 14, 1941.

5. Burch, F. E.: Association of Ectopia Lentis with Arachnodactyly, Arch. Ophth. 15:645 (April) 1936.

1. Ochsner, A., and deBakey, M.: Thrombophlebitis and Phlebothrombosis, South. Surgeon, 8:269 (August) 1939.

use of tobacco has led to an increased vascular irritability.

Eighty-three per cent of patients with thrombophlebitis are over 40 years of age, and 50 per cent are over 50. The sex ratio is the same⁽²⁾.

There is a marked increase in the incidence of this disease in the fall and winter months. This is interpreted as being due to the prevalence of respiratory infections at this time. It may also be explained by the increased vasoconstriction due to the cold weather. The latter explanation seems more likely in view of the fact that the incidence in the North is much greater than that in the Southern states.

Etiology

Thrombophlebitis is more apt to occur in the fat, overweight, pale individual with low blood pressure, and in debilitated persons, especially those suffering from cancer. Cancer of the pancreas is often associated with thrombophlebitis.

Infections such as typhoid and influenza are definite predisposing factors. Pregnancy *per se* does not seem to predispose to thrombophlebitis, but the liability to infection in the puerperium does.

Trauma is one of the most potent factors, especially in pelvic surgery, where mass ligatures are often used. Constriction from tight abdominal binders, immobility of the patient—in fact, anything that impedes the circulation—must be considered a predisposing factor. Circulatory disturbances often play an important role.

Precipitating Factors

Of the precipitating factors vascular changes play a most important part. These include damage to the endothelial lining of the vessels, blood changes such as increased coagulability, increased viscosity, and hyperproteinemia. It is also thought that, because of changes in the blood, nonpathogenic bacteria which would normally be phagocytized may remain in the blood stream and become the nidus of a thrombus. Intravascular clotting may also be precipitated by recumbent posture, immobility, and complete relaxation of the extremities.

The lower extremities are more apt to be involved than the upper, because of greater

retardation of the circulation. The left leg is involved twice as often as the right. The veins most apt to be affected are, in order, the deep femoro-iliacs, the deep veins of the calf, and veins which are varicose.

The vascular changes may be divided into those involving the perivascular tissues and those involving the wall of the vein itself. Lymphangitis of the perivascular tissues leads to edema, and, if allowed to persist, to fibrosis.

In the wall of the vein the intima may be damaged, allowing cellular exudation to take place. This leads to the formation of a white clot, which is firmly attached to the wall of the vessel and consists of fibrin, leukocytes, and platelets. It differs markedly from the thrombus that is formed where there is no damage to the wall. This latter type of thrombus consists of whole blood and is red and very soft. It is the type that is liable to break away and become an embolus. The white thrombus rarely gives rise to embolism.

Physiology of Thrombophlebitis

For years it was commonly taught that the clinical manifestations of thrombophlebitis were due primarily to blockage of the venous system. That this explanation is not adequate is shown by the fact that a vein can be ligated without giving rise to the symptoms. Some years ago Matas⁽³⁾ suggested that thrombophlebitis might be due to lymph stasis; later Leriche⁽⁴⁾ showed that vasospasm is an important factor. McMasters⁽⁵⁾ showed that the flow of lymph is dependent on arteriolar pulsations. Ochsner experimentally produced a chemical thrombophlebitis, and showed that the arteriolar pulsations were greatly diminished, and that swelling occurred⁽⁶⁾. Injections of the sympathetics prevented these manifestations, and when used after the swelling had taken place, tended to restore normal conditions. Because of this effect he feels that the clinical picture must be explained by disturbed physiology rather than on an anatomic-pathologic basis⁽⁷⁾.

Normally the passage of fluids from the

3. Matas, Rudolph, cited by Ochsner and deBakey (7).

4. Leriche, cited by Ochsner and deBakey (7).

5. McMasters, cited by Ochsner and deBakey (7).

6. deBakey, M.; Burch, G. E.; and Ochsner, A.: Effect of Chemical Irritation of Venous Segment on Peripheral Pulse Volumes, *Proc. Soc. Exper. Biol. and Med.* 41:585 (June) 1939.

7. Ochsner, A. and deBakey, M.: Thrombophlebitis; Role of Vasospasm in the Production of Clinical Manifestations, *J. A. M. A.* 114:117 (January 13) 1940.

2. Matas, Rudolph: Postoperative Thrombosis and Pulmonary Embolism Before and After Lister, *Univ. Toronto M. Bull.* 10:1, 1932.

vein into the perivenous spaces is dependent on filtration pressure. The passage of fluids from the perivenous spaces back into the veins is the result of osmosis, plus the flow of lymph. Apparently, then, the mechanism is this: When the vein becomes the seat of a thrombus, vasoconstrictor impulses are set up. Venous spasm plus mechanical blockage of the vein increases the filtration pressure, and there is an increased exudation of fluids into the perivenous spaces. Arteriolar spasm then causes a slowing of the lymph flow. This results in an accumulation of fluid in the perivenous spaces, with increased hypoproteinemia. The osmotic pressure is increased until it is almost equal to that in the vein, and prevents the return of the lymph to the vessels.

Effect of Novocain Injection of the Sympathetics

When novocain is injected into the sympathetics the vasoconstrictor impulses are interrupted, and there is a decrease in venous pressure, with increased vascularity and increased peripheral pulsations. The decreased venous pressure results in decreased filtration pressure, and this tends to prevent transudation of fluids into the perivascular spaces. The increased oxygenation restores the normal permeability of the mucosa and this in turn prevents excessive transudation. Increased peripheral pulsations speed the flow of lymph, and so tend to remove the fluids from the perivascular spaces.

Diagnosis

Pain over the involved segment is the most constant finding. Low grade fever is almost always present, unless there is suppuration, in which case the temperature is hectic in type. Swelling is variable, and when present is made worse by the dependent position. If the deep veins are involved it is almost always present, but if the superficial veins are involved it may be absent. If the deep veins are involved the pallor and cyanosis may be so great as to lead to a diagnosis of arterial embolus. In deep vein involvement the temperature of the involved limb may be markedly lowered, and pulsations are greatly decreased.

Treatment

Heretofore the treatment of thrombophlebitis has been prophylactic, conservative, or

radical. The prophylactic treatment consists in eliminating factors that tend to slow the circulation, and in preventing trauma. Some physicians have even placed a bicycle-like apparatus on the foot of the bed to give the patient exercise. Immobility of the patient must be combatted; tight abdominal binders eliminated. Heat to the abdomen, causing a vasodilatation, is thought to be of help. The conservative treatment consists in elevation and immobilization, plus heat. In a few cases where suppuration takes place, the radical treatment of ligating the veins has been employed.

The technique of novocain injection of the sympathetics has been adequately described by Ochsner and deBakey⁸.

Results

Since April, 1940, we have treated 9 patients by novocain injection of the lumbar sympathetics, with excellent results. All were immediately relieved of pain. Swelling was not affected as a rule until three or four days after the first injection. The temperature subsided in two to five days. All patients required from two to four injections. The age of the patients ranged from 32 to 75. All but 2 cases were postoperative. Residual swelling was present after six months in two patients. The first case was the most spectacular, and I should like to report it in detail.

Case Report

A white female, aged 32, was admitted to the hospital suffering from a non-toxic colloid adenoma of the thyroid, and a marked retroversion of the uterus. A suspension was performed on March 30, 1940, and a thyroidectomy was scheduled for April 4, but was postponed one day because the patient had fever. The operation was performed on April 5, and by April 14 there was marked abdominal pain, pain in the left thigh, and elevation of temperature. On April 18 definite pelvic and femoro-iliac thrombophlebitis had developed on the left side. Between April 18 and 24 the patient had numerous transfusions and was treated with sulfa-

8. Ochsner, A. and deBakey, M.: Treatment of Thrombophlebitis by Novocain Block of the Sympathetics; Technique of Injection, Surgery, 5:491 (April) 1939; Peripheral Vascular Disease, Critical Survey of Its Conservative and Radical Treatment, Surg., Gynec. and Obst. 70: 1038 (June) 1940; Role of Vasospasm in Thrombophlebitis and Its Treatment by Novocain Block of the Sympathetics, Tri-State M. J. 13:2651 (January) 1941.

pyridine. Her condition gradually became worse, however.

On April 24 novocain was injected into the left lumbar sympathetics. Immediately following injection, before the patient left the operating room, she stated that she felt much better. By evening her temperature had dropped to 99 F.

On April 25 the injection was repeated. No change was noted in the swelling of the thigh and calf, the left thigh still measuring four inches greater than the right in circumference. On April 27 the temperature still remained around 99 F., but there was much less swelling. The injection was repeated.

On April 30 the temperature was normal. The patient was discharged on May 5, her thighs practically equal in size. She was examined again on June 4, and no residual symptoms were noted.

Summary

1. The incidence, etiology, and treatment of thrombophlebitis have been discussed.

2. The mechanism of relief of thrombophlebitis by novocain injection of the lumbar sympathetics is given.

3. The results of novocain injections in 9 cases of thrombophlebitis are given, the first case being reported in detail.

Psychotherapy for Depressed Patients—The patient who is depressed needs the comforting reassurance of his fellow men and women. He is eager to unburden his sufferings to all who will listen to him, yet frequently he is met with jeers and ridicule and sarcasm: "Oh, forget about it. Snap out of it, there is nothing wrong with you." These remarks are verbal darts which will become embedded even more painfully in the soul of the patient. He recognizes that he does not wish to be ill; he would like to be free of the torment of a saddened mood. He needs sympathy. Remember that the depressed patient is really sick.

The doctor in charge of a depressed patient should encourage him to talk. As a tool of psychotherapy, listening is far more effective than lecturing. Formal psychoanalysis, however, is to be discouraged because, during this treatment, the ego is revealed in an unpleasant light and the further depression of the ego may precipitate suicide.

Within the scope of psychotherapy, one may include reassurance, encouragement, guidance as to activity, and various occupational programs. Along with sympathetic listening, the physician and nurse should attempt to give hope by repeating words of encouragement as to recovery and a happier future. Patients need such encouragement and are temporarily relieved by words of cheer.—Joseph L. Fetterman: *The Nature and Modern Treatment of Depressions*, Ohio State M. J. 37:858 (September) 1941.

TREATMENT OF FACIAL PARALYSIS

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It is difficult to discuss the treatment of facial paralysis without giving some consideration to the causes of paralysis. A knowledge of etiology aids the physician in locating the exact site of the lesion producing the paralysis.

For convenience, the forms of facial paralysis may be classified as central and peripheral. The central type includes those forms of paralysis in which the lesion involves the pons above the facial nucleus. The peripheral type includes lesions in the nucleus or along the course of the nerve distal to it. The central type does not fall within the scope of the otologist but it should be eliminated in every case before treatment is started, as the procedures employed in treating the two types, are, of course, entirely different.

Rosenbeck has given us a workable method of differentiating the two types of paralysis. He says, "In the central type the paralysis may be bilateral; if it is unilateral, only the lower half of the face is paralyzed, the upper half escaping. In the peripheral type, the paralysis is always unilateral and the entire side of the face is involved. That the upper half of the face escapes in the central type, is due to the fact that, in this part of the face there are muscles which act bilaterally and have representation on both sides of the cortex, so that, if the disease affects one side, the other side continues to function. In the lower half of the face, the muscles are strictly unilateral and are unilaterally represented in the cortex."

The site of a peripheral lesion can be fairly definitely located, especially if it is limited. It goes without saying that the surgeon should not attempt to treat a paralysis resulting from an intracranial tumor by the same method that he would treat paralysis resulting from an injury in the facial canal.

Involvement of the seventh nerve inside the cranium—that is, between the pons and the geniculate ganglion—is associated with a disturbance of function of the eighth nerve as well, which causes deafness on the corresponding side. Tumors of the eighth nerve

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or cerebellopontile angle tumors would also give rise to deafness and facial paralysis.

Involvement of the geniculate ganglion alone results in a group of symptoms known as Hunt's syndrome. In addition to facial paralysis, there is a herpetic eruption in the external auditory canal and outer ear, with severe local neuralgic pains. There may be tinnitus, deafness, nystagmus or nausea in varying degrees.

In case the lesion is between the geniculate ganglion and the branch to the stapedius muscle the patient is disturbed by a severe tinnitus and hyperacusis.

If the lesion is in the canal above the point at which the chorda tympani leaves the nerve and below the branch to the stapedius the sense of taste in the anterior two thirds of the tongue is affected on the corresponding side. The patient may also complain of an excessive flow of saliva.

Let us suppose that in a given case the otologist has located the lesion along the course of the facial canal. What then is to be done for the patient? In the first place, such a paralysis is most likely to be caused by one of three conditions—namely, Bell's palsy; swelling from an adjacent ear or mastoid infection; or an injury due to a mastoid operation. The history of the case usually aids greatly in the differentiation.

Bell's palsy usually comes without any evident cause, and frequently is seen following exposure of the face to drafts or following a nervous shock or nervous state. In the second condition (paralysis due to extension of infection) there is a history of either an acute or chronic ear infection. The third condition immediately follows a mastoid operation.

The prognosis in the majority of cases of Bell's palsy is good, and recovery is spontaneous in a large percentage of them. It must not be forgotten, however, that some of these patients have residual symptoms and a few have a permanent paralysis remaining, along with a twitching which is very annoying to the patient. It should not be taken for granted, therefore, that a case of Bell's palsy will spontaneously recover. A definite course of treatment should be instituted in order to assist nature as much as possible in restoring normal function to the face.

The treatment for the first ten days should consist of rest, heat either by compress or diathermy, and strychnine and iodides in-

ternally. After the first ten days, galvanic stimulation should be started in order to prevent muscle atrophy, and the patient should be encouraged in efforts at voluntary movements of the face before a mirror.

Recovery may be complete in a few weeks or improvement may be slow for a period of six or eight months. In some cases, a considerable degree of paralysis may be permanent.

If at the end of three months the results are unsatisfactory, there is only one thing left to do; that is, to uncover the seventh nerve in the facial canal, and split the nerve sheath. This has been done repeatedly by the late Dr. Duel of New York, with very splendid results in cases in which muscle atrophy had not destroyed the facial muscles.

The cases of facial paralysis due to infection adjacent to the facial canal require prompt surgery. These patients usually recover promptly after either a simple or a radical mastoidectomy, depending upon the indications.

The third common cause of facial paralysis—injury due to operative procedures—is a surgical calamity which is fortunately rare. Any surgeon performing mastoid operations always runs the risk of causing this unfortunate accident, however. It is commonly believed that damage to the facial nerve occurs only in radical mastoid operations. Duel found, however, in repairing approximately one hundred such cases, that nerve injuries occurred more often in simple mastoidectomies than in radical.

There are two points at which such an injury occurs. The site most frequently involved is inferior to the mastoid antrum. In a case in which the antrum is small and the bone is sclerotic, the surgeon becomes disoriented and bores into the facial canal in his efforts to find the antrum. The accident is seldom recognized at the time it occurs. The second point at which damage occurs to the nerve is beneath or medial to the aditus ad antrum. In removing the bridge, the surgeon may cut the nerve, or more likely depress the bony wall against the nerve. The covering of the nerve at this point is much thinner than in other parts of the canal, thus making this mishap more likely to happen at this point.

Surgical injury of the nerve gives a total paralysis of the corresponding side of the face which is evident as soon as the patient

awakes. Postoperative paralysis from other causes usually comes on a few hours or days after operation.

Previous to the work of Duel and Ballance, there was very little to be done in the treatment of these cases. They were either left alone to develop extreme sagging of the paralyzed side, or the distal end of the facial nerve was anastomosed to one of the cervical nerves. The latter procedure was entirely unsatisfactory because in cases where the graft was successful, there were uncoordinated movements and paralysis of some muscle or group of muscles. The anastomosis operation was never the answer to traumatic facial paralysis.

Duel introduced to this country the autogenous nerve transplant in these cases. This operation consists in uncovering the facial nerve from the stylomastoid foramen upward beyond the point of injury. After the injured portion of the nerve has been found, and the damaged distal and proximal ends trimmed away, a transplant from the anterior cutaneous branch of the femoral nerve is laid into the gap. The transplant is covered with gold or platinum foil beyond the junctions, and the wound is packed with pieces of tape.

It is preferable to prepare the nerve in the thigh three weeks before the transplant is made. This preparation consists of identifying the nerve three inches below the groin and severing it. A very fine silver wire is attached to the distal end in order that it may be easily identified at the time of the operation. This procedure is carried out in order that wallerian degeneration may occur in the distal part of the nerve and only the neurilemma be left at the time of the transplantation. This degenerated nerve simply acts as multiple conduits for the axis-cylinders which grow out from the proximal end. In successful cases, six months are required for this extension of the axis-cylinders to their terminals in the muscles. Therefore, no improvement may be expected in a successful case sooner than six months after the operation. In successful cases, almost normal motion is restored in the lower part of the face. The patients are able to close the eye, but no motion is restored in the forehead. Probably the most important result of the entire operation is the restoration of muscle tone in the face, which eliminates the sagging appearance of the face and the progressive atrophy of the muscles.

This operation has been a great blessing to patients unfortunate enough to have this accident, and should certainly be performed on such patients, at least within six months following the injury. If the surgeon is aware at the time that he has cut the nerve, the repair should, of course, be done at once.

This operation is extremely difficult and tedious, and should not be attempted by surgeons until they have had some instruction by a preceptor and considerable practice on fresh autopsy material. The patients have very little reaction to this operation ordinarily, but the dissection goes extremely close to the horizontal semicircular canal and to the cochlea. In case either of these should be opened, the patient would probably develop meningitis. It is hoped that this operation will not be brought into disrepute by being done poorly.

303 Hume Mansur Building.

THE IMPORTANCE OF RECOGNIZING FUNDUS PATHOLOGY

C. R. MILLS, M. D.

GREENSBORO

Recognizing fundus pathology and knowing how to treat it are among the most important duties that the ophthalmologist has to perform. In this country there are many, many people who have become blind in one or both eyes because they had "eye trouble" and put their faith in the diagnosis of someone who was not sure of what he saw. It behooves all of us to be absolutely sure of what our examination reveals, and if we are not sure to get the opinion of another specialist before treating someone for a condition that he may not have.

In the last year and a half I have been very much impressed with the tragedies that can result from our human errors in diagnosis. An 81 year old woman had her glasses changed by a doctor who told her that she had glaucoma in both eyes and might go blind if she were not operated upon right away. Her cornea was clear, her anterior chamber was of normal depth, her disc cuppings were physiological, her finger tension and tonometer readings were in the normal limits, and her fields for white, blue, red and green were full. She did not have glaucoma.

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Another woman went to see her family doctor because she was nervous and run down from worry over her eyesight. She had been told that she had chronic glaucoma in both eyes, and she had been putting several drops of pilocarpine in her eyes daily for eight months. Examination revealed perfectly normal eyes except for a refractive error. After her mind was relieved and the drops discontinued, she had a new lease on life.

A man 30 years old was brought to me with a history of a diseased eye which he had had for two years. He had been hospitalized several times for fever treatments and had been given sulfathiazole. Slit-lamp examination revealed an acute interstitial keratitis. His blood Wassermann was negative, but there was a history of a chancre seven years previously, followed by anti-luetic treatment. I began giving him extensive anti-luetic treatment right away, and his eye started to clear up within a few days. In three weeks it was perfectly normal again. A spinal Kahn test was positive. If the fibers of his optic nerve can stand it, he will also be given a course of tryparsamide.

I recently resected an extensive conjunctival papilloma from the entire conjunctival surface of the left upper and lower eyelids of a boy 4 years old. A year ago, when the growth was first noticed, he was seen by another doctor, who advised the family to wait eight or twelve months to see what would happen. It is too early yet to determine whether or not he will have any scar tissue on his lids, but if he had had the papilloma removed a year ago he would have had a better chance for a complete recovery and the chances of its becoming malignant would have been lessened.

These are only a few of the cases I have seen in which an incorrect diagnosis had previously been made. I do not doubt that some of you here could tell about a number of patients that I have seen and misdiagnosed, because I am only human, too.

I should like to show some slides illustrating normal and pathological fundi. Figure 1 is a normal fundus. Figure 2 is the fundus of a patient who would probably complain of progressive loss of vision in one eye over a period of a few days. The edema around the nerve head, the hemorrhage, and most important of all, the exudates, which

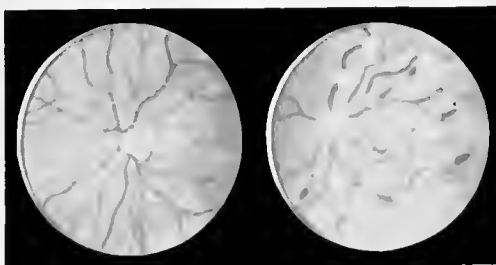


Fig. 1

Fig. 2

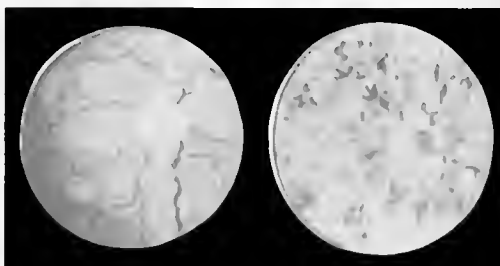


Fig. 3

Fig. 4

are present in an eyeball only when there is an infection, all point to neuroretinitis.

The patient with this case of papilledema (fig. 3) would probably have headaches, and possibly a partial paralysis on one side, but would have no loss of vision. There is elevation of the disc, and the typical edema and spreading out of the nerve head. Although they do not show up in the picture, you would see quite a few hemorrhages. There are no exudates. There is no reason why this case should be interpreted as neuroretinitis.

Figure 4 illustrates a type of pathology in which the patient would become blind fairly rapidly over a period of a few days. There is edema around the nerve head, and many hemorrhages. The tortuous and distended veins and arteries are almost obliterated. There is no exudate. There is no excuse for failing to recognize this case as a thrombosis of the central vein.

Case Reports

I should like to report 2 cases of neuroretinitis.

Case 1. W. D. H., a white male 24 years old, came in to see me in September, 1939, just before making final arrangements to go to Richmond to see a brain specialist. He had just been told by another physician that he had a brain tumor, and had better go to

Richmond at once. The family wanted another opinion, so they brought him to me. He gave a history of a gradual loss of vision in his left eye beginning ten days previously. Vision in his right eye was 20/20 and in his left 20/400. Ophthalmoscopic examination of the left eye revealed a typical case of neuroretinitis with the usual edema, hemorrhages, and exudates. Just above the macula there was a large exudate about the size of two disc diameters. Visual fields of the right eye were full. X-ray examination of his teeth was negative, but he had some infected tonsil remnants. I explained to the family that I was fairly certain he did not have a brain tumor, and that his chances for recovery of much vision were not too good. He was hospitalized for twenty-four hours, during which time we began local treatment. A surgeon in Greensboro, who knew the family well, helped me with the case. He asked me about the chances for recovering much vision, and I told him that when an infection is present in the optic nerve as long as ten days there is bound to be some permanent damage, even if the focus of infection can be removed right away. He advised me to send the patient to Baltimore, because the man was of a prominent family and I had not been established in Greensboro very long. I sent him to Dr. Bagley in Baltimore. He stayed there several weeks, during which time his eye was treated and his infected tonsil remnants were removed. After he came back to Greensboro I kept his pupil dilated, gave him sulfanilamide, and had hot packs applied to the eye. Two months after the onset of his infection he had 20/20 vision in that eye. That is the most remarkable recovery of vision I have ever seen with an infection of that kind.

Case 2. C. W. H., a 32 year old white male, came in to me in the summer of 1940 complaining of blurred vision in his left eye for a week. He had 20/20 vision in his right eye and 20/50 in his left eye. Fundus examination revealed a typical neuroretinitis. A general medical examination gave no relevant findings. X-ray examination of his teeth showed one dead tooth with a suspicious shadow at the root. His tonsils were examined by two physicians, who stated that they did not seem to be infected. These doctors also looked in his eye and made a diagnosis of thrombosis of the central vein, and said that removal of the ton-

sils and bad tooth would not do the eye any good. However, the patient consented to the removal of his tooth and tonsils. His tooth had quite a large pus sac on the end of it. After the operation I started treating his eye locally and gave him sulfanilamide. His recovery was held back a little by a large hemorrhage which he had soon after his tonsils were removed. One month after I first saw him, his vision was 20/15, and he has had no trouble with the eye since.

Summary

I have not intended in this talk to disparage any physician for making mistakes now and then. We are all human and are bound to make an incorrect diagnosis sometimes. Diagnosing fundus pathology is not easy, and it is essential for us to be sure of what we see when we look into an eyeball. Our mistake may be the cause of some individual's having to carry a white cane the rest of his life.

INSTRUCTION VERSUS SERVICE IN THE HEALTH PROGRAM

P. Y. GREENE, M. D.

Alamance County Health Officer

GRAHAM

All of us will agree that the majority of health workers in North Carolina are not pedagogists, either by training or by aptitude. Certainly we spent the greater part of our time during our professional training period learning to be doctors, nurses, or sanitarians. To most of us that meant learning how to size up a situation so that we could render the proper service. How often we have told the patient, or if we did not tell him, have said to ourselves: "This is the type of service you need; it matters not what your feeling is." In the practice of medicine—that is, that phase of medicine that deals with a sick patient—to assume such an attitude may assist the patient to a more rapid recovery; but even then how often we see recurrence of the same condition because the patient had not been taught *prevention*. We who are workers in preventive medicine defeat our own purpose if we do not teach the individual as we serve him. I do not contend that all services have an educational value; however, many do. It is our responsibility

to make the public understand the purpose of each such service. Let us assume that such services have a primary and secondary purpose: the first, to accomplish a certain aim; the second, to teach the individual some principle of public health.

One of our first duties as health officers is to enforce the quarantine regulations. When we visit a patient suffering from a communicable disease our primary purpose is to quarantine the patient and to make an epidemiological investigation; equally important is to teach the patient and his family how they may prevent the spread of this and other communicable diseases. Two years ago a patient from Alamance County was sent to a hospital outside of the county, where a diagnosis of typhoid fever was made. The case was not reported to the Health Department, nor was the family acquainted with the seriousness of the disease. The result was that four other members of the family were treated at public expense, since the Health Department was not given an opportunity to make an epidemiological investigation and to instruct the other members of the family in the control and prevention of this disease.

Another of our duties is to administer immunizing agents. Obviously, the primary purpose of this is to prevent a particular disease. It is well to make a patient aware that he is not only protecting himself, but that he is building up a "block" that will contribute to the protection of other individuals of the community.

A considerable portion of the time of my staff during the past three years has been devoted to the control of venereal diseases, with special emphasis on syphilis. I am sure that this is the case throughout the state. As judged by the usual standards our program is far from adequate; however, we have been able to accomplish a great deal during this period. One of our best means of "holding" patients is through instruction given the patient, calling attention to the probability of complications and the necessity of taking treatments regularly.

For six or seven years prior to the establishment of the Alamance County Health Department, the Service League of Burlington conducted a syphilis clinic in Burlington. When the Health Department was established, we took over this clinic. The records turned over to us at that time showed that most patients had received from six to

twenty-five treatments; few had had more than this number. Most of the patients were domestic servants. About all they knew about the disease for which they were being treated was that they had "bad blood" and that in some mystic way it interfered with cooking and caring for children. It was the rule rather than the exception for these patients to discontinue treatment when unemployed, or while doing other work. If the patient became pregnant, she usually dropped out of the clinic. Those patients who progressed to a stage where the serological test gave a negative result were given a rest period.

By constant emphasis upon the purpose of treatment, the general morale of this clinic has been greatly improved. Attendance is fair, and often patients without request bring to the clinic for examination other members of the family or friends. While we do not wish to boast of our syphilis control program, we do know that we would be in far worse shape had we not gained the patients' cooperation largely through personal instruction and advice.

One of our most pressing problems is the control of tuberculosis. This is one of the best fields in which to join education and service. Probably more than 50 per cent of the new cases of tuberculosis in Alamance County are discovered by the epidemiological studies and examinations made by the Health Department. The Public Health Nurse visits a newly discovered case of tuberculosis primarily for the purpose of rounding up contacts. However, the instructions that she gives the patient may be vastly more important. How often we have seen other members of a family develop this disease because we did not do a thorough job in instructing the patient in the simple methods of prevention. In Alamance County since the first of this year we have given more than 2900 tuberculin tests and have had more than 900 individuals x-rayed. If in rendering these services we have failed to teach them something about the seriousness of the disease and its prevention, much of our work has been done in vain.

Thus far in Alamance we have not developed a very extensive maternal and infant health program. However, we have had one experience which shows that instruction is necessary along with the rendering of service if good results are to be obtained.

For a number of years a lay group of Burlington has been conducting a white baby clinic, assisted by a local pediatrician and a Red Cross nurse. Last fall they decided to establish a Negro baby clinic. We agreed that they might hold the clinic in our Burlington office provided one of our nurses would be permitted to assist at the clinic, if for no other purpose than to keep watch over our equipment. The nurse who was assigned to the clinic was instructed not to neglect a single opportunity to give public health instruction. Six months later the pediatrician in charge was so impressed with the results of the Negro baby clinic as compared with the progress of the white baby clinic that he asked the clinic sponsors to approach us on the subject of permitting them to move the white baby clinic to our office, so that it might be conducted in like manner.

Most of us are more or less dissatisfied with our school program; we trust that when Dr. Wilkins and his group have completed their study we will be in a position to carry out a more effective program. Here, of all places, it seems to me, our services should be instructive. Our school program in Alamance consists of periodical inspection of all school children (in most instances this means once a year); a thorough examination of all children of the first and sixth grades; and a dental program for twenty weeks each year carried out by a representative of the Division of Oral Hygiene of the State Board of Health.

We have a school population in Alamance of approximately 13,000. In doing routine inspections if we fail to get across to the teacher and the child methods of determining minor defects, the time spent is wasted, since we actually see the child at such infrequent intervals.

The school examination is a more detailed inspection, and since we must depend on the private physician to correct the defects found, we must make clear their seriousness and advise the parents as to the best methods of correction. All of us realize the importance of having the parents present during these examinations, in order that we may point out to them the defects and explain the effect that these might have on the child's future health. During these examinations, I keep on hand an assortment of pamphlets. In addition to discussing the child's condi-

tion, I give the parent a pamphlet concerning that particular condition, in the hope that they will read it and realize the urgency of carrying out my recommendations.

We are all familiar with the emphasis the Division of Oral Hygiene places on "instruction together with service".

Finally, let us not forget the services rendered by the sanitarian. Much more can be accomplished if the sanitarian is careful to show the individual why he is to carry out certain measures, rather than making a formal inspection and telling him that he *has* to carry them out.

It has been our experience that cafe operators, plumbers, and other laymen are all ready to cooperate when they are shown the advisability of making a certain change.

When the new market regulations came out we endeavored to show the proprietor that hot water, cutting blocks, refrigeration, and other improvements would make his work easier, and would probably increase the sale of his products, at the same time that they enabled him to meet the sanitary requirements. After making the necessary changes many of these individuals expressed themselves as wishing they had made these improvements before.

In conclusion, I should like to state my belief that there is no real conflict between service and education in public health work. It is up to health workers to render health services in such a way that they have educational value.

Abstract of Discussion

Dr. R. L. Carlton (Winston-Salem): I am convinced that Dr. Greene has correct ideas about health education and that he is applying those ideas in the work of his department.

Many years ago I arrived at the conclusion that many, if not all, the activities and services of a health department have educational value; certainly if the service itself does not have educational value it does present an opportunity for instruction which should not be overlooked.

I have tried to impress on the members of the Winston-Salem health department that every service—whether it be delivering a birth certificate to the mother of a new baby, a visit to quarantine a case of measles, a visit in the interest of a well baby clinic, an inspector's visit to a food handling place, the serving of a notice to abate a nuisance, or a call on a delinquent venereal disease patient—can be made to have an educational value if the worker will realize his responsibility and make the most of it.

The nurse who makes a prenatal visit or who calls on the mother of a new baby may perform a small service so far as actual work is concerned, but she may leave with the mother a booklet on prenatal care, or one on infant or child care, or she

may point out the wisdom of taking the baby to the clinic or to the family doctor for a check-up; and such instruction may be of great value to members of that family. The very fact that communicable diseases are reportable and that an epidemiological investigation is made and a great many questions are asked and recorded in the presence of the family is convincing evidence to those people that the disease is important and that not only should something be done about that particular case, but steps must be taken to prevent further spread of it.

It seems that health education as a project of health department practice still needs much talk, much clear thinking, and most of all, much doing. Every health officer who has been in public health work for some years realizes this need. Ask your nurses about the homes they visit. They will tell you that many mothers still think their children "should get catching diseases early to get them over with;" that people still believe tuberculosis to be inherited. Young men still tell each other that gonorrhea is no worse than a cold; filth is commonly thought to be the cause of disease; and mothers-to-be are still told that they must lose a tooth for every child.

Such misinformation must be combatted. The lies and half truths of many advertisers, faddists and propagandists must be exposed. The obstacle of indifference must be overcome. Well informed persons still fail to demand clean pasteurized milk. Intelligent mothers still neglect the vaccination of their children against smallpox or their immunization against diphtheria, even though we have a North Carolina law making such procedures compulsory. Parents still fail to take their children to a doctor or a dentist (or to go themselves) unless they have an ache or a pain.

All this superstition, misinformation and indifference is a challenge to health departments all over North Carolina. Just why has health instruction been so largely neglected? For neglected it has been in my own department and I am reasonably sure it has been in others too.

We make excuses and do not tackle the job. We all want to be efficient health officers; and we will be if we see the whole program and put our souls into each part of it.

None of us have the funds we would like to have and should have for carrying on a health education program. Is that a very valid reason for our own neglect? Why do we get funds to carry on diphtheria immunization? Because we believe in its value and we have convinced the public and the appropriating boards. Why don't we get funds for health education? I wonder if it is because we ourselves are not sufficiently sold on the proposition to sell it to our boards. There has never been keener popular interest in health subjects than now. The vendors of all sorts of articles—underwear, lemons, tooth-brushes, galoshes—are playing the health motive hard. Never was sound advice upon a few simple health rules more needed than this day. Some one is going to meet this demand. The public should look to the health agencies and the medical profession for health guidance. If health officers do not meet this obligation we lose out. I believe that this matter of health education is not difficult. And I believe that it will be a well established function of all our departments when health officers generally are convinced that it is really necessary, practical and productive of many good results.

All of which I have said by way of emphasis and commendation of Dr. Greene's good paper and of the fine work he is doing in Alamance County.

URETERAL ECTOPIA

WALTER E. DANIEL, M. D.

CHARLOTTE

Partial or complete duplication of one or both ureters is comparatively common. It is encountered so frequently that no one bothers to report such cases any more. It is estimated that it occurs in 3 to 4 per cent of the cases that come to pyelography and autopsy⁽¹⁾. When the duplication is complete, the two ureteral orifices are usually located on the ureteric ridge of the bladder, one above the other, the ureter draining the upper pelvis opening lower in the bladder, and vice versa (Weigert's law). Consequently, the ureter draining the upper pelvis is always the one opening ectopically.

Ureteral ectopia is relatively rare. In 1930, Sargent⁽²⁾ was able to collect only 186 cases from the literature. In 1937, Furness⁽³⁾ was able to find 240 cases. It is reported to occur about twice as often in females as in males. This ratio may be more apparent than real, since in men the ectopic ureteral opening is usually located in the prostatic urethra or the seminal vesicle, and incontinence of urine does not result. The diagnosis is also more difficult in men for reasons that are obvious.

Incontinence of urine is the usual symptom that causes these patients to seek relief. The incontinence is characteristic in that there is a constant dribbling of urine in spite of normal bladder function. When partial obstruction of the ectopic opening is present—and it usually is—it causes one-sided abdominal pain and symptoms referable to the gastro-intestinal tract. In 40 cases of ureteral duplication with obstruction or infection, or both, Campbell⁽⁴⁾ found that 30 patients had gastro-intestinal disturbances. In a few of these patients, such disturbances were paramount.

When infection occurs in that portion of the kidney drained by an ectopic ureter, chills and fever must be added to the list of symptoms.

Submitted for publication November 24, 1941.
From the Thompson-Daniel Clinic.

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With the present methods of diagnosis, the true condition of the urinary tract can usually be determined. The history of this characteristic type of urinary incontinence will put the examiner on guard. By careful inspection of the urethra, vaginal vestibule, and vagina, one can usually locate the ectopic orifice. The intravenous administration of indigo carmine may help in locating the opening. However, if obstruction with resulting hydronephrosis is present, the kidney function may be so much impaired that the dye is not excreted in sufficient quantity to color the urine. In such cases, no help is derived from this procedure. Likewise, intravenous urography would be of no value, as the damaged kidney would not excrete the iodide. The most satisfactory method is to locate the orifice by careful inspection. The opening can then be catheterized and retrograde pyelography done. It frequently happens that the catheter can be passed only 2-3 cm. up this ureter, because of kinking, stricture, or mucosal folds. Even so, enough iodide can usually be injected to outline the ureter. Then retrograde or intravenous urography can be used to outline the remainder of the urinary tract.

In men the diagnosis is much more difficult, as they usually do not have urinary incontinence. This probably explains the fact that in men the diagnosis is usually made at autopsy.

In the reported cases the treatment has consisted of nephrectomy, heminephrectomy with and without ureterectomy, vaginal and abdominal ureteral ligation, and re-implantation of the ureter into the bladder. Nephrectomy, of course, cures all cases, but it sacrifices the uninvolved half of the kidney. Vaginal and abdominal ligation of the ureter is successful in about 50 per cent of the cases. Re-implantation of the ureter into the bladder is a formidable procedure and a hazardous one, especially since these transplanted ureters frequently become dilated and infected, necessitating a later operation. Heminephrectomy seems to be the most rational treatment, as the offending segment of the kidney is removed, leaving the undiseased portion. When the ureter is dilated and infected, it, too, should be removed, although I believe its removal down to the pelvic brim will usually suffice.

Case Report

A white female, aged 5 years, was brought

to the hospital by her mother, who acted as the informant. The mother stated that since birth the patient had had incontinence of urine. She voided normally without pain, in spite of which there was a constant dribbling of urine. The voided urine was amber colored, while the drainage was perfectly clear and colorless, and did not stain the pads which the patient, of necessity, wore. The child also complained occasionally of dull pain in the left side of the abdomen and was subject to frequent gastro-intestinal upsets consisting of generalized abdominal discomfort and distention.

On physical examination there was no abdominal tenderness, and neither kidney was palpable. The external genitalia were moist and clear water could be seen trickling from the vagina. The catheterized urine was amber, clear, and negative. With the use of a Kelly clamp as a vaginal speculum, a small opening was seen on the roof of the vagina about 2 cm. inside the introitus. The opening was catheterized with a No. 4 ureteral catheter, which met an impassable obstruction 4 cm. from the orifice. However, the catheter drained clear, colorless urine which was negative microscopically.

Twenty-five cubic centimeters of 20 per cent skiodan were injected through the catheter and an x-ray plate was taken which showed the ureter to be greatly dilated, kinked, and tortuous throughout its entire length. It ended in a large rounded bulb in the region of the upper pole of the left kidney (fig. 1). Intravenous urography was performed and it showed the right kidney pelvis and ureter to be well filled and normal. The lower pelvis of the left kidney, together with its ureter, was likewise well filled and normal (fig. 2).

First operation: Under general anesthesia with the patient in the kidney position, the left kidney was exposed. The upper half of this kidney was soft and obviously just a dilated sac, while the lower half was firm and normal in appearance. The upper half did not have a separate blood supply. The large dilated ureter draining the upper segment of the kidney was divided and ligated with No. 1 chromic catgut. The proximal end of this ureter was anchored with one catgut suture to the undersurface of the muscles at the posterior end of the incision. The wound was then closed.

Following operation, the patient ran a very high fever, which was not of the septic



Fig. 1. Retrograde pyeloureterogram of the ectopic ureter. Note the marked dilatation, kinking, and tortuosity.



Fig. 2. Intravenous urography done immediately after the retrograde pyeloureterogram (fig. 1). The right kidney and ureter are well filled and normal. The lower half of the left kidney is also normal.

type. She took food poorly and had much trouble with abdominal distention. The white blood cell counts ranged from 15,000 to 32,000. Twelve days after operation, urine began to drain from the posterior end of the incision. Immediately the fever and abdominal distention disappeared. The patient was discharged and told to return later for a second operation.

Second operation: Six weeks later, under general anesthesia, the left kidney was again exposed. The upper segment was even more greatly dilated than on the first examination. Heminephrectomy was considered, but a line of cleavage could not be found. We were afraid of causing hemorrhage and of injuring the blood supply to the lower half of the kidney. Nephrectomy was carried out and the dilated ureter was removed down to the pelvic brim.

The patient made an uneventful recovery. She was last seen eight months after operation. She was feeling well and had gained

weight. The incision was firm. The urine was clear and negative.

From the history in this case, it was suspected that there was an ectopic ureteral orifice. It was also concluded that this ureter was markedly dilated and drained a functionless segment of the kidney. This conclusion was based on the fact that the drainage was clear and colorless and did not stain the pads. Because of the left-sided abdominal pain, the left kidney was indicted.

From the review of the literature and our observations on this case, we do not feel that ureteral ligation should be carried out in the presence of ureteral dilatation or infection. Retroperitoneal ligation should probably never be tried, since there are 50 per cent failures and any later operation is rendered more hazardous for the patient and more difficult for the surgeon. On the other hand, vaginal ligations are quite simple and possess all the advantages and none of the

disadvantages of retroperitoneal ligation. If this procedure fails, heminephrectomy or nephrectomy has not been made more difficult, and the patient has not been shocked greatly by a previous major operation. The most acceptable procedure seems to be heminephrectomy, since only the offending portion of the kidney is removed.

I wish to express my appreciation to Dr. John R. Ashe, whose advice and aid were invaluable in the care of this patient.

AN ACCESSORY ABDOMINAL TESTICLE

OSCAR W. CRANZ, M.D., F.A.C.S.
KINSTON

The majority of the reported cases of polyorchidism should be accepted with the greatest reserve. Most of the essayists on this subject have presented clinical data alone, and have failed to confirm their statements by histological and pathological proof.

Jeannin and Delater⁽¹⁾ refer to a case described by Lassen as the first authentic report of this condition. He found two small tumors, bound together by a cord, arising from the normal testicle in a hydrocele. There was no determinable connection with the vas deferens. On section the tumors were found to be made up of testicular tissue, but there was no evidence of active spermatogenesis.

The same authors also refer to a case reported by Mariotte, in which the patient was operated on for a left inguinal hernia, and in which there was found, beside the normal testicle, a body as large as a bean, furnished with a little vas deferens. Microscopic examination showed the two organs to be identical in tissue structure, but the supernumerary organ was found to be inactive.

Haas⁽²⁾, in operating on a boy for inguinal hernia and cryptorchidism, found a supernumerary testicle on the left side with a vas deferens. Microscopic examination showed atrophic glandular tissue.

Day⁽³⁾ reported the case of a man supposed to have had five testes. On examination the subject was found to have two nor-

mal scrotums and a third rudimentary one. Two apparently normal testicles occupied each scrotal sac, and an atrophic one was thought to be present in the scrotal sac posteriorly.

Hall G. Holder⁽⁴⁾ in 1924 reported the case of a man who presented an area of marked inflammation surrounding the location of the femoral and inguinal lymph nodes. The inflammatory process extended upward 6 cm. above Poupart's ligament and downward on the medial side of the left thigh. An incision was made in this area, and creamy pus was encountered. This was done on the surgical service.

Eighteen days after admission, the patient, who had become progressively worse, was transferred to the urological service. Examination revealed two large discharging sinuses in an area of gangrene extending all over the inflamed region and also on the shaft of the penis and the scrotum. An incision was made connecting the two sinuses and a mass supposed to be the inguinal lymph node was removed. The mass, however, presented testicular tissue, a vas deferens, and an epididymis. Two apparently normal testicles and a normal scrotum were also found. The lining epithelium showed that active spermatogenesis was taking place.

Case Report

D. M., a white male aged 30, married and the father of four children, was admitted on the surgical service of Memorial General Hospital of Kinston, on February 10, 1940, with a chief complaint of pain starting in his epigastrium ten hours before admission. He had been seen by his family physician, who administered one fourth grain of morphine. The pain was relieved, but in four hours returned again, more severe in character, now extending over the entire abdomen, and accompanied by nausea and vomiting. The bowels had moved once and were of normal consistency. The past history was entirely negative and the patient stated that he had always been in normal health except for a few diseases of childhood. He had had no previous operations.

Physical examination on admission showed a well developed, well nourished white male. The head, neck, and lungs were normal. The heart was normal in size and position, with

Read before the Seaboard Medical Society, Virginia Beach, Virginia, December 3, 1941.

1. Jeannin et Delater: Testicules Surnuméraires. A propos d'une observation de troisième testicule histologiquement en activité. *Bulletin et Mémoires de la Société Anatomique*, 93:677 (November) 1923.
2. Haas, A.: Supernumerary testicles. *Deutsche Ztschr. f. Chir.* 16:1 (January) 1922.
3. Day, G. H.: One Man With Five Testes. *J. A. M. A.* 71:2655 (December 21) 1918.

4. Holder, Hall G.: A Probable Case of Triorchidism. *J. Urology* 13:535 (May) 1923.

a regular rate and rhythm. The blood pressure was 130 systolic, 80 diastolic. The temperature was 100 F., the pulse 90, and respirations 22. Tenderness was present over the entire lower abdomen, but was more marked in the right lower quadrant. Cutaneous hyperesthesia was elicited on the right. There was moderate rigidity of the right rectus muscle and rebound tenderness. There were no palpable masses, nor was any distention present. Rectal digital examination was negative. Two normal testes were normally implanted in the scrotum. The prostate was firm and of normal size and consistency. A prostatic smear obtained later showed a normal sperm count with normal activity of the sperm.

The leukocyte count was 14,400, with 88 per cent polymorphonuclears, 4 per cent eosinophils, and 18 per cent lymphocytes. Urine examination was negative, and the Wassermann test was negative.

A tentative diagnosis of acute appendicitis was made, and under spinal anesthesia (100 mg. of novocain) the abdomen was opened by incision. When the peritoneal cavity was entered, a thin grayish fluid was encountered. No odor could be detected. The appendix was found to be free and covered with a serosanguineous exudate. It was markedly distended and acutely inflamed, and was removed in a routine manner. Just as closure of the peritoneum was begun, there was noticed a cyst-like mass, suspended by a cord or pedicle from the inner side of the peritoneum. This was examined thoroughly. The pedicle could not be traced any farther than the peritoneum, and apparently did not run down to the internal ring. The pedicle was ligated at its base and removed along with the mass. The wound was closed in layers without drainage, and the pathological specimen was sent to the laboratory for examination.

Dr. Robert P. Morehead made the following pathological report on the specimen:

Gross Description: The specimen consists of a bilobate piece of tissue which measures $3\frac{1}{2}$ by 2 by 1 cm. This piece of tissue is roughly heart shaped, and its outer surface is glistening. On section, a thin-walled cyst is seen which possesses a smooth lining, and which measures $1\frac{1}{2}$ cm. in diameter. The other portion of the tissue is occupied by a mass of grayish brown tissue, which is encapsulated, and measures $1\frac{1}{2}$ cm. in diameter. This tissue resembles testicular tissue.

Microscopic Description: Sections show a dense fibrous tissue capsule which resembles the tunica albuginea. Beneath this fibrous tissue capsule are many structures which resemble amyloid. The interstitial tissues resemble those of the testicle. At the other end of the section are structures which are identical with the glands of the epididymis, and the columnar cells show many cilia. One large cyst is present which is lined by a layer of cuboidal cells. There is no spermatogenesis.

Diagnosis: Intra-abdominal testicle.

The patient had an uneventful postoperative convalescence and was discharged in one week's time.

Conclusions

1. Polyorchidism is a rare condition.
2. Many cases reported in the literature are not proven cases.
3. The case presented is, to our knowledge, the seventh case proven by pathological study reported to date.
4. The case reported in this paper is the only proven case in which the accessory testicle was found in the abdomen on the right side.

The Importance of Pelvic Examination in Abdominal Lesions.—A distinguished author suggests that "if the history and abdominal findings are inconclusive, a careful yet gentle pelvic examination assumes great importance." In reviewing our mistakes, the most vivid impression gained was that more errors were committed by omitting the pelvic examination than by omitting all other diagnostic procedures combined. May we, therefore, urge pelvic examination through the vagina or through the rectum not only when the history and abdominal findings appear to be inconclusive, but in all cases?

An intact hymen rules out salpingitis almost certainly, but a palpable Bartholin's gland, purulent Skentis or urethral discharge is strong circumstantial evidence, and cervicitis in a nullipara is more than gossip.

Tenderness of the adnexa is best demonstrated by a maneuver not described in text books. The examining finger pushes the cervix to the right. The uterus acts as a lever and puts the right adnexa on stretch. Tenderness elicited by this simple maneuver earmarks the diagnosis.

Induration of acute salpingitis may be demonstrable only when the patient is relaxed. With the patient and the operating room prepared for appendectomy, if the relaxation of the anesthesia permits a correct diagnosis, it is sound judgment to postpone operation until the tube "cools off".

Pelvic examination is important in suspected ectopic. The uterus is enlarged, the cervix is soft, and there is slight bleeding. The pregnant tube "rides high" and forward, whereas pus tubes are heavy and fall back into the depths of the cul de sac.—William J. Carrington: *Differential Diagnosis of Acute Lower Abdominal Lesions in the Female*, J. M. Soc. New Jersey 38:504 (Sept.) 1941.

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MARCH, 1942

THE EIGHTY-NINTH ANNUAL SESSION

It has been twenty-two years since the State Medical Society last met in Charlotte. The attendance then broke all previous records. We have stayed away too long from the Queen City, and when the members of the Society meet for the eighty-ninth annual session, they may be sure of a royal welcome. President Webb Griffith and Secretary Roscoe McMillan are leaving nothing undone to insure the success of the meeting, and the local committee on arrangements is cooperating nobly. The various section chairmen are already hard at work preparing for their respective groups, and some of them expect to present some interesting innovations. The hotels of Charlotte are well prepared to take care of a large delegation, and the Hotel Charlotte, the official headquarters, will offer adequate facilities for the various meetings. It will be worth the trip to inspect Charlotte's magnificent new hospital.

The Auxiliary will hold its annual meeting at the same time—so don't forget to bring your wife along.

Please remember that the first meeting of the House of Delegates will be held at 2 p. m. on Monday, May 11. There is so much business to be transacted by this body that this afternoon meeting is necessary.

Don't forget the time—May 11, 12, and 13; and the place—Charlotte, with headquarters at the Hotel Charlotte.

* * * *

IMMUNITY IN VIRUS INFECTIONS

One of the most puzzling problems in immunology has concerned the virus diseases. Since one attack of most of the recognized virus diseases usually confers lasting immunity, why is the immunity from the common cold and influenza—now generally conceded to be of virus origin—so short lived? We all know that a single attack of smallpox, chicken pox, measles, or yellow fever will confer life-long immunity; but most of us know from personal experience that it is possible to have several colds in one year, and at least two attacks of influenza.

In a recent article¹, Rivers discusses the question of virus immunity, and offers a plausible explanation for this apparent discrepancy. His theory is that lasting immunity results from the virus's remaining within the tissues of the host. This would not mean that such an individual is capable of spreading the disease, for the virus is probably "stored in some remote part of the body within living cells where it can not come in contact with circulating antibodies and from which point it can not . . . reach the outside world." In the case of the respiratory diseases, Rivers postulates that the virus does not long remain within the body, perhaps because of the type of tissue involved. "For example, it is possible that in the case of the common cold and influenza the viruses attack superficial tissues, establish themselves in such tissues and would lead to an enduring immunity if these tissues themselves were not temporary . . . the superficial cells lining the respiratory tract are being thrown off at regular intervals to be replaced by new cells from deeper layers and do not provide a permanent abode for viruses."

Whether this theory is finally proved or not, it offers an intriguing explanation of a baffling phenomenon.

1. Rivers, Thomas M.: Immunity in Virus Infections. Science 95:108 (January 30) 1912.

THE SULFONAMIDES

In the *New York State Journal of Medicine* for February 1 the monthly Conference on Therapy by members of the Departments of Pharmacology and Medicine of Cornell University Medical School is devoted to the sulfonamides. The whole discussion is of great interest, and repays careful reading. The following points are of paramount interest:

1. Sulfadiazine at present bids fair to be used more than all the other sulfonamide derivatives combined, because of its low toxicity, its freedom from unpleasant nausea and other side effects, and its wider range of effectiveness.

2. The sodium salts of the sulfonamides are highly soluble in water, and may be given parenterally. During the past year sodium sulfadiazine in 25 per cent solution has been administered routinely at Bellevue without untoward effects. The solution is given slowly through a small gauge needle. It is also thought that even by mouth the sodium salt of sulfadiazine is more quickly absorbed, more effective, and no more toxic than is the drug itself.

3. A higher concentration in the spinal fluid is obtained with sulfadiazine than with any other sulfonamide—the level being from two thirds to 80 per cent of the blood level. Sulfathiazole gives the lowest concentration in the spinal fluid—about one third the blood level; sulfanilamide and sulfapyridine, about two thirds.

4. The initial dose of sulfadiazine recommended in pneumonia is 4 Gm. by mouth or 2.5 Gm. intravenously, followed by 1 Gm. by mouth every four hours until at least twenty-four hours after the temperature has subsided.

5. This group have not found the sulfonamides effective in subacute bacterial endocarditis.

6. In seriously infected abdominal lesions the use of sulfadiazine has proved a life saver. The intravenous route is used just before and after operation, until the patient is able to take the drug orally. The drug is given for about a week altogether. The blood concentration is kept at around 3.5 to 4 mg. per 100 cc.

7. While the prophylactic use of the sulfonamides is being extended, the point was

made that the group does not recommend their use "for minor conditions like sinusitis and the common infections of the upper respiratory tract."

REFERENCES

In the preparation of manuscripts for publication in the NORTH CAROLINA MEDICAL JOURNAL, no one thing has given as much trouble as has the matter of references. Although this subject has been discussed in a previous editorial¹, it seems necessary to state again the preferences of this Journal in the arrangement and form of bibliographic references.

The NORTH CAROLINA MEDICAL JOURNAL follows as nearly as possible the arrangement of references recommended by Dr. Morris Fishbein in his book, MEDICAL WRITING, and employed in the *Journal of the American Medical Association*. Dr. Fishbein states: "References to the literature and comments on various matters mentioned in an article that are to be used as footnotes should be numbered consecutively through the article, with corresponding . . . reference figures in the text . . . Although in the printed article footnotes appear at the bottom of the page on which they are mentioned, in the preparation of the manuscript they should be typed, in double space, on a separate page following the text matter."

Although some publications follow the custom of grouping references at the end of a paper in the form of a bibliography, Dr. Fishbein says that this should be done "only when an exhaustive review of the literature has been made on a subject of sufficient importance to warrant such a survey."

References will be much more valuable to the reader if they are given in the proper form and contain the full information necessary to locate them. A complete reference to a book should give, in the following order, the author's surname and initials, the title of the book, edition, place of publication, name of publisher, year of publication, volume (if more than one have been published) and page. References to magazine articles should contain the author's surname and initials, title of the article, name of the periodical, volume, page, and date of publication. The number of a periodical should not be included when the volume number is given.

1. The Preparation of Manuscripts, North Carolina M. J. 1:161 (March) 1940.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

WILEY D. FORBUS, M. D.,
O. C. HANSEN-PRUSS, M. D., and
HALLA BROWN, M. D.

Presentation of Case

The patient, a 42 year old colored farmer, entered the hospital complaining of chills and fever. The family history was not contributory, and the patient's previous general health had been excellent. He had had gonorrhea twenty-four years ago, and twenty-one years ago had passed dark colored urine over a period of four days. This was attributed to "straining and lifting a heavy object"; there was no history suggesting renal colic.

The patient's present illness began three weeks before admission, with diarrhea, nausea, vomiting, and loss of appetite, which he attributed to strawberries he had eaten the day before. Because of the weakness and general malaise he remained in bed during the next week. He consulted his family physician on June 9 because of persistence of the diarrhea and malaise. He had not noticed any clay colored or tarry stools. The physician found his temperature to be 102.3 F. All food was omitted for twenty-four hours, and he was given 15 grains of sulfathiazole four times a day for three days; fluids were forced. He improved and went back to work, but one week later the malaise returned, and he was found to have a temperature of 102 F. The stool and blood cultures were reported negative for typhoid organisms by the State Laboratory. Examination at this time showed the tongue to be coated, the gums receding, the belly soft and not tender; the liver was not enlarged or tender. The urine contained no pus, albumin, or sugar. A malarial smear was negative for parasites. Three days later (June 19) the patient complained of a severe pain under the right costal margin, which "nearly shut my breath off." His temperature was 103.3 F., pulse 120, respirations 24. His physician reported a definite "splinting" of the right lower chest anteriorly and posteriorly. The percussion note was dull in this region and the breath sounds

were distant. There was some increased resistance in the right upper quadrant, with tenderness over the liver margin. On bimanual palpation a mass was felt in the right flank. The spleen was questionably enlarged.

Admission to Surgical Service: The patient was admitted to the surgical service on June 24, 1941. The temperature was 35 C., the pulse 90, respirations 22, blood pressure 110 systolic, 70 diastolic. He was well developed and well nourished and in no apparent distress, but he appeared moderately ill. The skin was hot and moist. Scattered over the entire body, but particularly over the sternum, there were multiple small subcutaneous "semi-cystic" masses which seemed to be attached to the skin. The inguinal and axillary lymph nodes were slightly enlarged, but not tender. The pupillary reactions and eye grounds were entirely normal. The trachea was in the midline; the thyroid was not enlarged. The lungs were clear to percussion and auscultation. The diaphragms were symmetrical, and the heart was normal in all respects. The abdomen was described as flat. The liver was palpable 7 cm. below the costal margin and extended well past the midline, and there was tenderness on quick pressure over the liver. The spleen and kidneys were not palpable. There was no evidence of any free fluid in the abdomen.

His hemoglobin was 64 per cent, and there were 4,500,000 red blood cells and 40,000 white blood cells, with a marked preponderance of segmented polymorphonuclears and only occasional stab and juvenile forms. A smear for malarial parasites was negative.

Two days later the patient was seen by the medical consultant, Dr. Horack, whose physical examination confirmed the findings of the admitting surgeon, except that Dr. Horack found the spleen to be palpable and slightly tender. Typhoid fever and amebiasis with amebic abscess of the liver were suggested as possible diagnoses.

A proctoscopic examination by Dr. Ruffin disclosed a diffusely injected rectal mucosa with a moderate amount of pus. He felt that the appearance of the mucosa was suggestive of an acute colitis due to the typhoid dysentery group rather than amebic colitis. Agglutinations for the typhoid-paratyphoid group were negative.

The patient remained on the surgical service for a week, and during this time had a

spiking fever with a moderate tachycardia. He was transferred to the medical service on June 30.

Admission to Medical Service: The general physical examination gave the same findings previously noted. The hemoglobin was 9 Gm., or 58 per cent; the red blood cells 3,000,000, with a color index of .97, and a mean corpuscular volume of 109 cubic micra. There were 15,920 white blood cells, with 75 per cent polymorphonuclear segmented cells, 3 per cent stabbs, 2 per cent juveniles, 3 per cent large lymphocytes, 10 per cent small lymphocytes, 3 per cent eosinophils, 1 per cent basophils, and 1 per cent monocytes. No malarial parasites were seen. The blood Wassermann and Kahn reactions were negative.

Many specimens of urine were examined. The specific gravity ranged from 1.010 to 1.020; the reaction for sugar and albumin was always negative. The microscopic examination of the urinary sediment showed nothing abnormal except an occasional granular cast toward the end of his illness. The benzidine reaction was persistently negative.

Agglutination tests for typhoid, paratyphoid A, paratyphoid B, and *Proteus* X₂ were negative. Cultures of the urine and stool showed no typhoid-dysentery organisms. Numerous blood cultures were made, and all were sterile.

The blood nonprotein nitrogen ranged around 32 mg. per 100 cc. The serum van den Bergh reaction was at first indirect (bilirubin 0.3 mg. per 100 cc.), and on July 22 became direct (bilirubin 16 mg. per 100 cc.). The bromsulfalein test on July 1 showed a retention of 8 per cent.

X-Ray Studies: A fluoroscopic examination of the lungs on June 25, the day after admission, showed the lungs, diaphragm and mediastinum to be normal. The diaphragms moved freely. An x-ray of the chest was negative. A flat plate of the abdomen taken on the same day showed an area of decreased density in the liver opposite the anterior portion of the fifth rib. The liver was enlarged. An amebic abscess was felt to be a possibility.

On July 6 the patient was given thorotrast and a series of x-rays of the liver region were made, but these were unsatisfactory because of insufficient concentration of the thorotrast. On July 14 fluoroscopic and x-ray examination of the chest was again per-

formed. At this time the right diaphragm was described as being high and fixed. An area of thickening was seen in the lung, extending from the medial portion of the right diaphragm upward and laterally to the interlobar fissure. A film of the mid-abdominal region showed a large liver and a questionable area of rarefaction in the liver. Bilateral retrograde pyelograms showed the urinary tract to be normal. Eight days later x-rays were taken of the gastro-intestinal tract. Six hours after the barium meal there was about 25 per cent residue in the stomach and the stomach was found to be displaced to the left by what appeared to be an enlarged and hard liver. The duodenal bulb filled well, with no evidence of any lesion. In the distal portion of the bulb there was a persistent spasm and delay in emptying which was so marked that it was thought to be responsible for the six hour retention. At twenty-four hours the barium was found to be in the splenic flexure and sigmoid colon. The transverse colon was quite spastic and possibly pushed down by the enlarged liver.

Course in the Hospital: The patient lived for about five weeks after the transfer to the medical service. During this time he had a spiking fever with a moderate tachycardia and rather frequent shaking chills. He was given large amounts of vitamins and was also given six large blood transfusions of 500 cc. each in the course of about three weeks, and large amounts of glucose. On July 9 he was started on sulfathiazole, and was given 6 Gm. a day until July 15. He was then given a course of emetine, 64 mg. a day, for seven days. Neither of these remedies had any effect on his temperature curve or general condition. On July 22 a thoracentesis yielded 675 cc. of reddish-brown fluid; the specific gravity was 1.018, the cell count 7. Gram stains and acid fast stains failed to show any organisms. Pigs inoculated with the fluid died a month later without showing any evidence of tuberculosis or any other disease. The fluid was cultured aerobically and anaerobically and no organisms were grown.

Blood chemical studies done on July 29 gave the following findings: blood nonprotein nitrogen, 29 mg. per 100 cc.; total plasma proteins, 6.1 Gm. per 100 cc., albumin 1 Gm. per 100 cc., globulin 5.1 Gm. per 100 cc., albumin-globulin ratio 0.2; blood sulfathiazole 4.1 mg. per 100 cc.

The patient developed a gradually increas-

ing abdominal distention and finally a frank ascites. The white cell count ranged between 10,000 and 15,000; the hemoglobin and red cell count ranged around 55 per cent and 3,200,000 respectively. The patient grew rapidly weaker, and became comatose on August 4. He died that afternoon despite the administration of various stimulants.

Discussion

DR. O. C. HANSEN-PRUSS: The clinical problem, initially, was the explanation of a high, persistent, irregular fever. The usual bacteriological and immunological studies were negative. Metastatic embolic phenomena were not observed—at least, not in the sites where they most commonly occur (skin, kidneys). There were no clinical evidences of an endocarditis. The leukocytic formula showed a relatively insignificant shift to the left in the hemogram, despite a febrile illness of several weeks' duration. In view of these facts, a pyogenic infection, certainly a bacteremia, seemed unlikely until the latter part of July. There was no concrete evidence of a pyogenic infection which could explain this man's febrile response.

Every clinician has been confronted with the problem of an "unexplained" fever⁽¹⁾. It has been correctly stated that fever may be the first manifestation of a malignant neoplasm. This seems to be particularly true in cancer of the kidneys and of the adrenals⁽²⁾. Fever is also a frequent accompaniment of metastatic carcinoma of the liver. In this patient there were no demonstrable signs of cancer, such as enlarged peripheral lymph nodes, roentgenological evidences of bone involvement, or bleeding. Cancer may be discovered post mortem in this case but there are no clinical data other than the unexplained fever and the palpable liver to warrant such a diagnosis.

Because of the story of dysentery and the enlarged liver, amebiasis was considered. The appearance of the colonic mucosa was not that usually seen in amebic colitis, and, what is more important, amebas could never be demonstrated in the stool or in the material obtained by proctoscopy⁽³⁾.

In July, approximately eight weeks after

the onset of the illness, there appeared the physical signs of fluid in the right pleural cavity. In addition, x-ray films of the chest revealed some process in the parenchyma of the right mid-lung. Thoracentesis yielded about two pints of a "reddish-brown" fluid, with a low cell count. Cultures of this fluid remained sterile and inoculated guinea pigs failed to develop tubercular lesions. The following questions arise: (1) Was the process in the right pleural cavity and mid-lung the result of an extension from a primary sub-diaphragmatic disease? (2) Are they delayed manifestations of primary pulmonary or bronchial disease? (3) Is the thoracic disease independent of a previous fever-producing lesion? (4) If the thoracic and sub-diaphragmatic processes are related, is the underlying process of an inflammatory or a neoplastic nature?

The clinical data suggest strongly that the inception of the disease was in the bowel. Very early in the disease the liver became involved; the persistently low plasma albumin⁽⁴⁾ and the final development of ascites point to an extensive derangement of liver function. Because of this it seems logical to assume that the intrathoracic disease represents an extension of the intra-abdominal disease. A pyogenic infection could not be proven; furthermore, the disease progressed under intensive chemotherapy. The same objections can be offered to a possible amebiasis. It is, of course, impossible to state definitely that this man's illness was not of neoplastic origin. Yet it seems unlikely that he died of cancer when repeated studies and clinical observation over a period of almost eleven weeks failed to prove its existence.

This leaves us with the final diagnostic possibility: a fungus infection. It is suggested that this man developed a fungus infection of the bowel, probably actinomycosis. The clinical course, the apparent mode of extension and metastatic spread suggest that the fungus, if it is a fungus, was Actinomyces. It has been stated⁽⁵⁾ that the primary lesion in most cases is in the lung. In our case, the sequence of events points to a primary focus in the intestines, with subsequent extension to the right pleura and lung.

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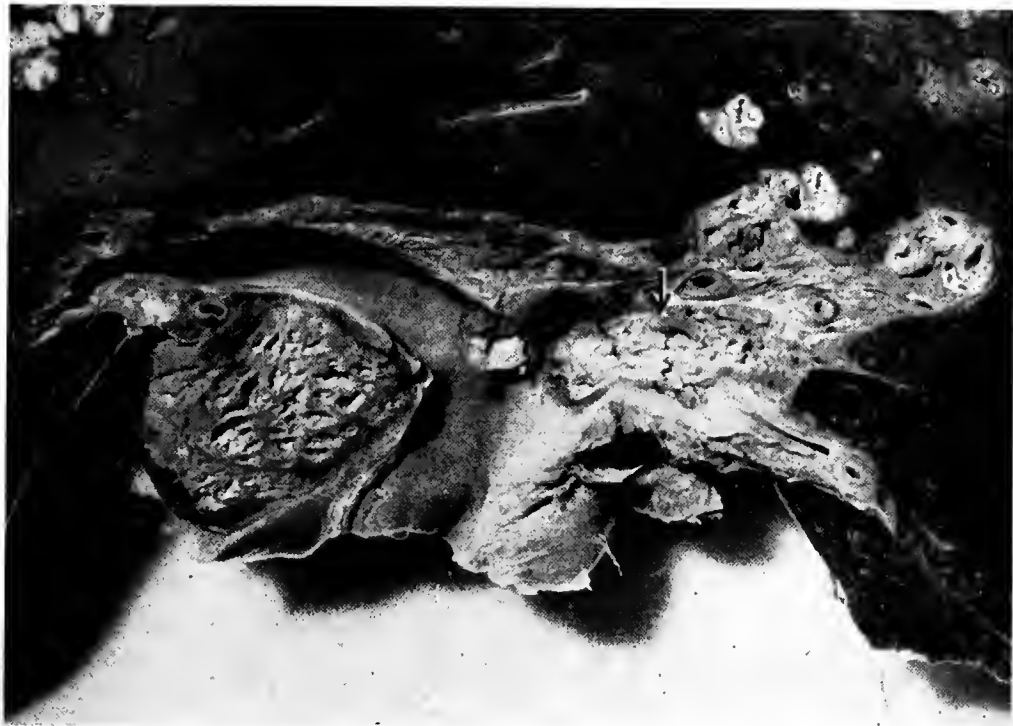


Fig. 1. Hilus of liver, showing pylephlebitis (arrow).

Experience has demonstrated that in the abdominal form of actinomycosis, the primary focus is most frequently in the appendix or in the sigmoid⁽⁶⁾.

Dr. Hansen-Pruss's Diagnosis

1. Actinomycosis, primary in the intestine, spreading to the liver, right pleura and right lung.
2. Death from toxemia due essentially to a secondary pyogenic infection.

Anatomical Diagnosis

Actinomycosis of the appendix; actinomycotic pylephlebitis; multiple actinomycotic abscesses of the liver; rupture of the hepatic abscess into the subphrenic space; extension of the subphrenic abscess through the diaphragm; fibrinous peritonitis and pleurisy; multiple actinomycotic emboli to the lungs; pulmonary arteritis and periarteritis; lobular pneumonia, bilateral; gastric polyp; submucosal hemorrhages in the gas-

tro-intestinal tract and bladder; multiple sebaceous cysts; minimal atherosclerosis.

Anatomical Discussion

DR. WILEY D. FORBUS and DR. HALLA BROWN: The most conspicuous morphological changes are found in the appendix, the portal vein, the liver and the lungs. The entire gut is dilated and covered with fine fibrinous adhesions, but the appendix alone shows evidence of actinomycosis. It is bound down and angulated by old adhesions. The wall is thickened, and cut section shows a large dark yellow plaque in the thickened area. Microscopically, the appendiceal mucosa is ulcerated. The blood vessels in the wall of the appendix show inflammatory, and in places, necrotic changes. The Actinomycetes appear as pink staining filamentous masses in the ulcerated submucosa. They are surrounded and partially engulfed by multinucleated giant cells. The entire appendiceal wall in these areas is infiltrated by plasma cells, macrophages, and polymorphonuclear leukocytes.

The actinomycotic process cannot be fol-

6. Lord, F. T.: Contribution to Etiology of Actinomycosis; Experimental Production of Actinomycosis in Guinea Pigs Inoculated with Contents of Carious Teeth. Boston M. and S. J. 162:82, 1919.

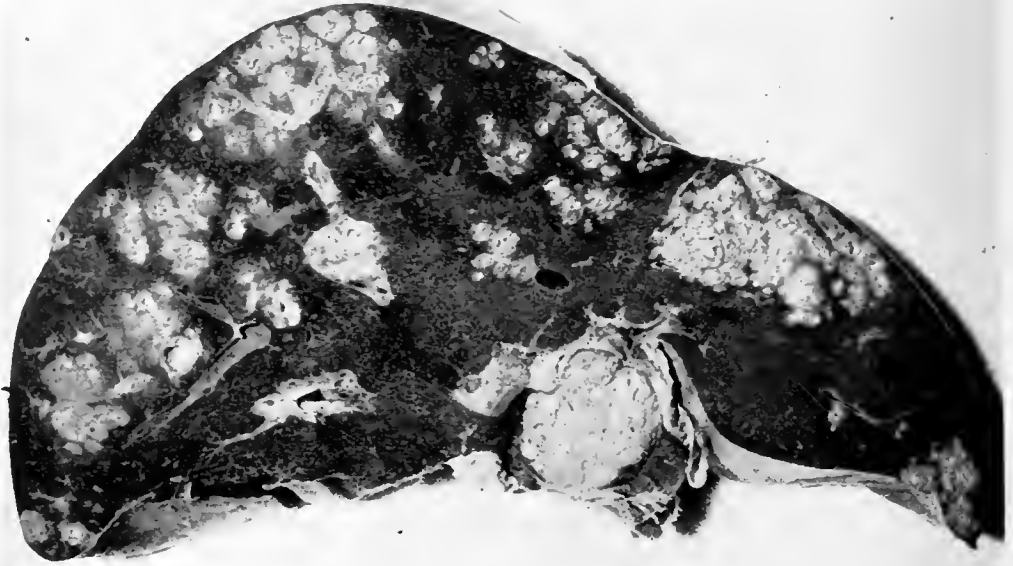


Fig. 2. Liver, showing multiple actinomycotic abscesses.

lowed between the vessels of the meso-appendix and the portal vein, but in the latter its presence is demonstrated beyond doubt. The portal vein is filled with thick creamy pus (fig. 1), and at the hilus one can see microscopically a typical sulfur granule within the lumen of a branch of the portal vein. The mycelia form a dense mass with the clubs irregularly arranged at the periphery.

The liver presents a striking picture. It is enlarged (3,160 Gm.) and studded by innumerable irregular racemose abscesses which replace most of the parenchyma (fig. 2). From the abscesses flows thick greenish pus in which sulfur granules can be seen on direct smear. Microscopically, the pattern is unvarying. Sulfur granules encircled by giant cells lie at the center of almost every abscess. Surrounding them is a zone of necrosis. Outside this and also scattered in the necrotic areas lie polymorphonuclear leukocytes. Fibroblasts lying in homogeneous scar tissue in most places form the wall of the abscess, but in other places liver cells immediately surround the necrotic area. The

gallbladder is backed by a similar large abscess that penetrates its wall.

Several of these racemose abscesses have run together in the right lobe of the liver to form a large round abscess immediately beneath the hepatic capsule (the area of density seen by x-ray). The diaphragm overlying it is congested, covered with exudate, and in places necrotic. The adjacent pleura is three times its normal thickness, the cells spread apart by exudate in which lie vacuole-containing macrophages. The adjacent lung tissue shows evidence of lobular pneumonia. Microscopic sections far removed from the diaphragm, in the left upper lobe, present an unusual appearance. In an area devoid of pneumonia, the blood vessels are thick-walled, some of them occluded. In one, sulfur granules form the core of a thrombus composed of necrotic material surrounded by fibroblasts. There are no Actinomycetes within the bronchioles.

The other organs are not involved in the actinomycotic process. A benign gastric polyp is present in the fundus, but it in no way obstructs the pylorus. The kidneys show minimal chronic inflammatory changes

which cannot be definitely related to actinomycosis.

The pathogenesis of the infection in this case is clearly demonstrated. The organism entered through the gastro-intestinal tract and lodged in the appendix, where the oldest lesions are found. From here it was carried by the ileocolic and superior mesenteric veins to the portal vein and so into the liver, which became studded with actinomycotic abscesses. From the liver the organisms were disseminated in two ways: first, by direct extension from the subdiaphragmatic abscess into the hepatic peritoneum, the diaphragm, and directly through the pleura into the right lung. The second mode of dissemination was by way of the hepatic veins, the inferior vena cava, the heart, and then the pulmonary arteries. This is evident from the fact that actinomycotic thrombi were found in the upper lobe of the left lung, which was not adherent to the diaphragm nor in any way involved by direct extension of the hepatic abscesses.

The relationship of the colonies of *Actinomycetes* to the inflammatory reaction in the liver is extraordinarily interesting. One sees all of the known forms of the organism in these colonies. Surrounding all of the colonies is a zone of polymorphonuclear leukocytes. These are in intimate contact with the masses of organisms. About some of the granules giant cells in all stages of formation can be seen. One feature of the giant cells that is extraordinary is the absence of nuclei in that portion of the giant cell cytoplasm lying adjacent to the actinomycete colony. This is further peculiar in the fact that the cytoplasmic mass of the giant cell fuses with the mass of organisms. In some places one giant cell extends its cytoplasm in a pseudopodial manner and almost envelops the actinomycete colony. These giant cells appear to act in every way like amebas or huge leukocytes in their approach to and encirclement of the actinomycete mass, which they eventually surround and take into their own body. The reaction to this organism is predominantly polymorphonuclear, although in the old abscesses mononuclear macrophages are abundant about the periphery. Giant cell formation is incidental and occurs only when there is an actual foreign body such as a dead colony to be disposed of. The reaction is much like that which occurs in blastomycosis.

To correlate the different stages of the in-

fection with the clinical signs and symptoms is far more difficult than to describe the pathological anatomy. The primary infection was evidently asymptomatic or so nearly so that we have no record of illness at that time. For some reason unknown to us the organism happened to invade a blood vessel. This probably was the cause of the acute episode three weeks before admission when the patient thought that he was suffering from an attack of food poisoning. With each of the febrile episodes *Actinomycetes* may be considered to have been liberated through the blood stream into the liver. The right upper quadrant overlying the liver became tender; when numerous abscesses had developed the liver became enlarged. Considering the degree of liver damage it is remarkable that the bromsulfonphthalein test showed only 8 per cent retention of dye. The ascites can be explained, as Dr. Hansen-Pruss suggested, first, by a lowering of the plasma proteins secondary to liver damage severe and diffuse enough to prevent their synthesis; second, by impairment of the circulation through the liver due to the multiple abscesses; and third, perhaps by a serous reaction to the numerous abscesses that bulged beneath the hepatic capsule. The shadows seen in the lungs on x-ray are due to bronchopneumonia secondary to actinomycotic pulmonary emboli. The pleural reaction to this process caused the hydrothorax.

This case exemplifies only one form of actinomycosis, the abdominal, the commonest form of the disease. Intestinal infection is thought to arise from swallowing *Actinomycetes*, which are normally found in the mouth and the tonsils. Why and how the organism penetrates the gastro-intestinal tract in some cases and not in others is not definitely known. The site of predilection is the ileocecal region, three quarters of the reported cases having occurred in this location. The signs are frequently those of an acute appendicitis. If the disease is of long duration the first sign may be a mass in the right lower quadrant due to extension of the chronic granulomatous process into the peritoneum. The disease is frequently of long duration, death or recovery occurring after months or years.

This case demonstrates the importance of remembering that the signs and symptoms of common disease processes, such as bronchitis, appendicitis, diarrhea, or superficial

infections, may be produced by many causes. To evaluate any case properly, one should run over in one's mind the rare as well as the usual causes of such a clinical picture. Only by this method will every eventuality be considered. In a diagnostic problem merely thinking of a workable etiology and pathogenesis wins half the battle.

Comment by Dr. Hansen-Pruss

This case teaches us again that all transudates and exudates, at least from patients who present a puzzling diagnostic problem, should not only be cultured routinely but also for fungi. Furthermore, fresh preparations of such material should be examined carefully. I am sure that the *Actinomyces* could have been demonstrated in the pleural fluid, if the proper studies had been carried out.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Negligence: A physician who is negligent in his treatment of a person injured through the wrongful act of a motorist is not primarily liable.

This is a case in which one man sued another to recover damages for personal injuries sustained when the automobiles in which they were riding collided. This action was based upon the alleged negligence of the defendant. The defendant in answering denied negligence on his part and set up a cross action against the plaintiff for personal injuries sustained and expenses incurred, which he alleges were proximately caused by the negligence of the plaintiff. The plaintiff filed a reply to the cross action, denying negligence and alleging that after said defendant sustained personal injuries resulting from the wreck of the two automobiles he employed and was treated by a physician who was guilty of malpractice in that he did not exercise ordinary care and apply the requisite degree of skill and knowledge in treating the defendant; and that the injuries sustained by the defendant were materially aggravated by the physician's negligence. The plaintiff therefore alleged that the physician was primarily liable, and on motion of the plaintiff's counsel the court entered an order making the physician a party defendant. A summons, a copy of all the pleadings, and the order making him a party defendant were served upon the physician. In due time the physician appeared and filed a demurrer to the plaintiff's reply, claiming that there was no sufficient cause of action alleged against him; that he was neither a necessary nor a proper party to said action; that there was a misjoinder of both parties and causes of action; and that several causes of action were improperly united. The court sustained the demurrer and entered judgment dismissing the action against the defendant physician. The plaintiff excepted and appealed.

The reason for including the doctor as codefendant was, of course, to force him to share in the damages which might be assessed against the plain-

tiff. When the case came before the Supreme Court for decision the Justice writing the opinion stated that in order for two persons to be joint tortfeasors, either they must act together in committing the wrong, or their acts, if independent of each other, must unite in causing a single injury. Therefore the party whose negligent conduct caused an injury and the physician who negligently treated the injury thus inflicted, thereby aggravating the damages resulting from the original injury, are not joint tortfeasors. The court felt that there was no concert between the original plaintiff in the case and the physician, nor did their acts of negligence concur in producing a single injury. The cause of action, if any, against the plaintiff arose out of his alleged negligence in operating an automobile, while that against the physician was grounded upon the breach of duty the law placed upon him by reason of the relationship created by contract of employment. The causes were only incidentally related in the sense that the physician happened to be treating an injury inflicted by the plaintiff. The physician's guilt, if any, was that of omission; since if he did not treat the injuries properly and skillfully he failed to minimize but did not in any sense cause the injury. There was no reason why the plaintiff should receive a contribution from the physician because of any relationship of primary liability, because none existed. The physician, however, upon the introduction of proper evidence might be liable in damages to the patient whom he treated for any untoward results which might have occurred due to his improper and unskillful management of the case. This, of course, would have to be brought up in an entirely different and separate action.

Although the Supreme Court confirmed the findings of the Superior Court and dismissed the action against the physician, he was nevertheless subjected to a long siege of expensive and troublesome litigation. (North Carolina Supreme Court, Vol. 219, p. 607. Decision rendered spring term, 1941.)

Modern Methods of Immunization. — Physicians who are concerned with the immunization of infants and children have as their goal the use of materials which will not sensitize the patient and the utilization of routes of administration that cause least discomfort. Definite assistance toward these objectives is provided by use of combined antigens in the opinion of a recent observer (J. Florida M. A. 28:330, 1942). The author has employed Combined Diphtheria Toxoid-Tetanus Toxoid, Alum Precipitated (Lilly) for the last three years without any untoward reactions.

The combination of diphtheria and tetanus toxoids is effected by mixing suitable amounts of the respective toxins which have been detoxified by the use of formaldehyde, and precipitating from this combination with alum the diphtheria and tetanus toxoids. The individual toxoids are tested for toxicity prior to mixing, and the combined alum precipitated toxoid is tested for toxicity after precipitation. Potency is determined by injecting guinea pigs with a human dose. After four weeks the blood serums of these animals must show at least 2 units of diphtheria antitoxin and 2 units of tetanus antitoxin per cubic centimeter of blood serum.

Should exposure to either diphtheria or tetanus occur before immunization against each disease is completed, the usual procedures for immediate protection of unimmunized subjects should be considered. The combined toxoid is not for treatment; it is a prophylactic measure of active immunization against diphtheria and tetanus.

MILITARY MEDICINE

LETTER FROM THE COMMITTEE ON MEDICAL PREPAREDNESS

February 27, 1942.

Dr. Wingate Johnson, Editor
NORTH CAROLINA MEDICAL JOURNAL
Winston-Salem, N. C.

Dear Dr. Johnson:

At the invitation of the Committee on Medical Preparedness of the Medical Society of the State of North Carolina Dr. Dudley Smith of Waynesville, N. C., is available to the County Societies and District Societies desiring instruction and information on conditions existing in the bombed areas of England and what measures are instituted against them.

Dr. Smith has just completed a year's service as a surgeon with the Red Cross in England. He has just returned to America and is well prepared to speak of the conditions which he met and the measures instituted to meet them.

There is no fee for his services except those incident to the expense which he may incur in traveling.

Very truly yours,

HUBERT B. HAYWOOD, M.D., *Chairman*
DONNELL B. COBB, M.D.
CARL V. REYNOLDS, M.D.

Committee on Medical Preparedness.

WORLD CONFLICT AND AMERICAN MEDICINE

Never since the first World War has the United States been so wholeheartedly united as since the Japanese attack upon Pearl Harbor. As medical men, we are naturally proud of the fact that our profession was preparing for the conflict a year and a half before our country became an active belligerent. It is well to consider just how the world conflict may affect us, and to begin to plan for the preservation of the high ideals of our profession. The discussion of our position by John M. Pratt, Executive Administrator of the National Physicians' Committee, is of such interest to every doctor that it is reproduced in full.

Organized medicine, at an earlier date and to a greater degree than any other nation-wide group, recognized the inevitability of world wide conflict,

The Record

In June of 1940 the House of Delegates of the American Medical Association established the Committee on Medical Preparedness under the Chairmanship of Dr. Irvin Abell. There was no waiting for a declaration of hostilities. The Committee formulated plans for a survey of medical abilities and skills such as was never before undertaken. In July of 1940 this Committee began compiling an inventory of the medical resources of a nation of 130,000,000 people. Continuously since, the almost incomprehensibly detailed task has been in progress.

Selective Service

On September 16, 1940, President Roosevelt signed the Selective Service Act and it became the law of the land. It was recognized fully that the need was for personnel for wholly mechanized forces. Only the mentally and physically near-perfect could qualify to drive the tanks, man the guns, pilot the bombers and pursuit planes in this total war.

On October 16th began the registration of all American men between the ages of twenty-one and thirty-five. On October 29th a number was drawn from an open-top glass container. The process of selecting the physically and mentally fit for an armed force, which may eventually number more than six million fighting men, was under way.

Physicians volunteered their services to man the examining boards in every area in every state.

Direct Contribution

On December 7, 1941—fatal date—the traitorous Japanese attacked Pearl Harbor. Before December 7th more than 25,500 physicians, working on more than 6,400 local draft boards, had examined approximately two million five hundred thousand men.

During this period it was essential to expand the nation's industrial plant and equipment limitlessly to provide planes and ships, trucks and tanks, guns and ammunition. Thousands of millions of dollars were expended by the Federal government. Other thousands of millions were made available by the government to private industry for this purpose. These expenditures are not questioned. Had the amounts been double or treble, they could be justified on the basis of the all-important emergency need.

However, it is a fact that American physicians, without prospect or even thought of reward, contributed their services to an estimated value of nearly Twenty-five Million Dollars. Not one dollar of recompense was asked or received.

Scientific Contribution

From the scientific standpoint, the efforts were, in all likelihood, even more important. "War Medicine", a new medical journal under the editorship of Dr. Morris Fishbein, was established. With characteristic thoroughness and efficiency the medical experiences and discoveries of the peoples actually at war were assembled, edited and made available to the medical profession.

A New Agency

In October, 1941, the Medical Procurement and Assignment Service was established by Presidential executive order. This agency operates under the Office for Emergency Management, Office of Defense Health and Welfare Services. It is understood that, to meet the ultimate needs, every physician may have to be called upon to contribute to the full extent of individual capacity.

The Procurement and Assignment Service has established headquarters for sub-committees in each of the nine military corps areas in the United States. These corps area committees are supplemented by state committees in every state. Using as a foundation the findings of the Committee on Medical Preparedness, The Medical Procurement and Assignment Service is in a position to meet our rapidly expanding military medical needs, provide for adequate civilian health and medical services, and insure an irreducible minimum of sacrifice and dislocation.

Enriable Position

American Medicine anticipated this present need. It has established a new place for itself—through service.

WORLD CONFLICT AND THE N. P. C.

The first paragraph of the first document ever published by the National Physicians' Committee (The Achilles Heel of American Medicine) reads:

"The weak spot in American Medicine is in its singleness of purpose. Its greatest danger lies in the exclusiveness of its devotion to scientific improvement and technical effectiveness."

Now, after Federal prosecution for criminal conspiracy, the real threat of the Wagner National Health Bill, and the menace of possible enactment of Compulsory Health Insurance, this statement is fairly well understood.

Under conditions now prevailing, the urge to "limit of capacity service" is irresistible. This introduces a new factor. Today, American Medicine's greatest danger lies in the possibility of refusing or failing to keep in mind medicine's fundamental concepts during a period of abnormal crisis.

Lest We Forget

Medicine must remember—must be made to remember—the fundamental factors that are responsible for its present place of pre-eminence. Its scientific achievement, its technical effectiveness, its capacity to anticipate this great emergency need, its ability to make the contribution it has made and will make in war effort are the result of conditions and principles under which it has been permitted to function.

The war in which we are engaged is as limitless as the farthestmost reaches of the world in which we live. It is a war of ideologies. Our only "cause" is that of acknowledgment of the sanctity of human personality.

Vital Task

Possibly Doctors of Medicine have not fully understood nor been concerned about the concept of basic human right. They have invariably practiced it. The basic tenet of American Medicine has been that "where there was disease a life was the issue. It mattered not whether prince or pauper was involved." If we are to make progress this principle must be preserved and sanctified. The whole of men's concepts are in flux. This basic tenet may be lost or sacrificed unless we make a task of preserving it.

It is essential that, at whatever cost, this war be

won. It will be won. However, the form and the design of a post-war world will be determined by the steps taken now and during the period of the conflict to preserve intact the important elements of the principle for which the war is waged.

On the Record

What position will medicine occupy in the post-war world? We quote from an N. P. C. bulletin published (the date should be noted) on November 12, 1940:

"We are confronted with war. We are faced with the insistent, compelling, all-important necessity of creating an adequate defense mechanism and organization. In all likelihood, armed conflict is imminent. We are forced to admit the necessity of certain centralizations of power to insure the most efficient and effective operation of our industrial plant and productive equipment. These are realities of the present.

"It is essential that we understand that, to the extent we move toward a form of Fascism, Nazism, Communism—totalitarian control—will we affect the practice of medicine in the United States. Under any form of governmental, social and economic structure, medicine must and will occupy merely its relative place.

"If the independence of medicine, our doctor and patient relationship, and our pattern of medical practice are to be preserved, we must preserve the principles underlying our free institutions."

There are no changes in the situation save the greatly increased tempo and the actualities of conflict.

Political Forms

Actually conducting the war are political administrations. Notwithstanding Pearl Harbor, the fall of Hong Kong, the siege of Singapore, MacArthur's heroic defense, the Libyan battles and the retreat of Germans on the Russian front, political aspirants are seeking nominations of their parties for senatorships and congressmen. Within the Congress Senators and Congressmen are vying with each other for places of power and authority. Within the Administration, Cabinet members and administrative officials are constantly forcing their claims for consideration or preferment. This is as it should be. However it must constantly be remembered that actions which may adversely affect medicine's effectiveness may result from political decisions.

Final political decisions are based upon the politician's beliefs of—"The understanding and convictions of the public—public opinion." In this sphere, medicine has an important, probably a decisive role to play.

In the N. P. C. Post-election Statement of Policy (November, 1940), Dr. Edward H. Cary, its Chairman, said:

"The medical profession now represents the only important group in the United States which, while harassed from within and without, has shown no slightest signs of capitulation or even of retreat.

"On the basis of this fact, it has automatically placed itself in the position of an intellectual leadership of those individuals, groups and institutions which seek to preserve the important elements of individual freedom and initiative and the principle of 'Private Enterprise'.

"If we live up to this opportunity and the serious responsibility it entails, the physicians of this country can—while preserving the independence of American Medicine—most importantly and vitally serve their country during its period of crisis and greatest stress."

This continues to be the position and policy of N. P. C.

Morale

Practically, unlimited resources are available. The production machinery is being provided to deliver the ships, tanks and aircraft, the guns and ammunitions in a never-ending stream. These are valueless without men—healthy men. We have the men. Their quality and their final effectiveness is wholly dependent upon their understanding of and their convictions relating to the fundamental rightness of our cause.

There would be no gain—there would be irretrievable loss—if the war is won and there is failure in taking steps to insure the peace. There must be no shadow of doubt as to our undertaking to establish the principles of "individual human right." In addition to its technical tasks, American Medicine must assume its fair share of this—the greatest single responsibility.

Medicine's Relative Place

In January, 1939, American Medicine was seriously menaced. It was facing criminal prosecution in Federal courts, threatened with destructive and restraining legislation, and was the victim of vicious propaganda designed to destroy the confidence of the public in its motives and its effectiveness. Today Medicine is respected. It is being accorded a confidence and an authority which enables it to render the most important single service in the all-encompassing effort to win—THE WORLD WAR.

In the achievement of this altered status and enviable position, the National Physicians' Committee has been substantially aided. Its contribution has been supplementary—but it has been of vital importance.

NATIONAL PHYSICIANS' COMMITTEE POLICY AND PROGRAM

The National Physicians' Committee pledges itself to the prosecution of three vital tasks:

1. To use its knowledge, its machinery, its strengths to aid—without qualification—in winning the war.
2. To utilize to full capacity its contacts, its resources, its facilities, its proven methods and its developed techniques to the end that:
 - a. basic issues and vital principles be kept clearly defined and be not lost or obscured in the haze of emotional reactions;
 - b. morale be maintained;
 - c. peace, in accord with fundamental concepts, may be won.
3. To maintain constantly "The Alert" and be continuously active in necessary and important spheres in an unlimited effort to preserve for the medical profession the independence and freedoms essential to its continued progress and greatest effectiveness in public service.

BULLETIN BOARD

PRESIDENT'S MESSAGE

On Monday, March 23, the members of the American College of Surgeons of Virginia, North Carolina and South Carolina will meet for a three days' session at the Washington Duke Hotel in Durham. At the same time and place there will be a meeting of those interested in Hospital Management. Programs of both meetings are given below. All physicians of the three states, regardless of whether they are members of the state medical societies, are cordially invited and urged to attend. Medical officers of both the United States Army and Navy, and representatives of the United States Office of Civilian Defense will be present and take active part. This meeting will give every doctor an opportunity to obtain first hand information about military service. Those who attend should be well repaid for their time and effort.

F. WEBB GRIFFITH, M. D.

* * *

American College of Surgeons—War Sessions One-Day Meetings

Outline of Program for Members of the Medical Profession

- 9:00 A.M.-9:45 A.M.—Panel Discussion: Treatment of War Injuries to the Skull and Face.
- 9:45 A.M.-10:35 A.M.—Panel Discussion: Treatment of War Injuries to the Chest.
- 10:45 A.M.-11:15 A.M.—The Organization and Functions of the Medical Department of the U. S. Army.
- 11:15 A.M.-11:45 A.M.—The Organization and Functions of the Medical Department of the U. S. Navy.
- 11:45 A.M.-12:15 P.M.—The Doctor and the Hospital in Civilian Defense.
- 12:30 P.M.-2:00 P.M.—Luncheon — Address and Round-Table Discussion of Procurement and Assignment Service.
- 2:15 P.M.-2:50 P.M.—Panel Discussion: Treatment of Wounds of Soft Parts.
- 2:50 P.M.-3:30 P.M.—Panel Discussion: Prevention and Treatment of Hemorrhage.
- 3:45 P.M.-5:00 P.M.—Panel Discussion: Fractures.
- 6:00 P.M.-7:30 P.M.—Dinner.
- 7:30 P.M.-8:00 P.M.—Activities of the American College of Surgeons and Their Relation to the Defense Program.
- 8:00 P.M.-9:00 P.M.—Panel Discussion: Treatment of Burns.
- 9:00 P.M.-10:00 P.M.—Panel Discussion: Prevention and Treatment of Shock.

Outline of Program for Hospital Representatives

- 9:00-10:30 A.M.—Forum: Civilian Defense as Affecting Hospitals—Conducted by Representative of the United States Office of Civilian Defense.
- 10:45 A.M.-12:15 P.M.—Joint Sessions for those in attendance at the meeting, including Physicians, Surgeons, and Hospital Representatives. Addresses by Representatives of the United States

Army, Navy, and United States Office of Civilian Defense:

The Organization and Functions of the Medical Department of the United States Army.
The Organization and Functions of the Medical Department of the United States Navy.
The Doctor and the Hospital in Civilian Defense.

12:30-2:00 P.M. — Luncheon for Physicians, Surgeons, and Hospital Representatives, followed by an address on the Procurement and Assignment Service.

2:15-5:00 P.M.—Panel Discussion: Hospital Problems Incident to the War:

Priorities.

Maintaining Adequate Professional and Non-Professional Personnel.

Relation of the Procurement and Assignment Service to the Hospital.

Organization of the Hospital for Civilian Defense.

Maintaining Standards of Service.

Meeting the Increasing Costs of Hospital Service.

6:00-7:30 P.M.—Dinner.

7:30-8:00 P.M.—Activities of the American College of Surgeons and Their Relation to the Defense Program.

8:00-10:00 P.M.—Panel Discussion: Treatment of Burns.

Panel Discussion: Prevention and Treatment of Shock.

POSTGRADUATE COURSES IN OBSTETRICS AND GYNECOLOGY

The State Board of Health, Duke Hospital and the North Carolina Medical Society are again co-operating in a program of postgraduate training in obstetrics and pediatrics for general practitioners. These courses are being made available by appropriations from the United States Children's Bureau. The courses will last five days, Monday through Friday, and will be repeated weekly through the spring and summer or as often as there is a demand.

The classes are to be limited to a minimum of four and a maximum of six physicians a week. The course will be informal, clinical and practical. There will be no examinations given and no certificates will be issued. The courses will be conducted by Dr. A. W. Makepeace (obstetrician) and Dr. Robert B. Lawson (pediatrician) of the departments of Obstetrics and Pediatrics of Duke Hospital. This is an excellent opportunity for general practitioners and health officers to brush up on the latest methods and practices.

There will be no expense to physicians attending these courses. Meals will be furnished in the doctors' dining room at Duke Hospital and rooms will be available in the graduate dormitory on the Duke campus.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The upward trend in North Carolina births, which has gained in momentum with the progress of World War No. 2, continued unabated in January, 1942, the second month of America's actual participation in hostilities. Last month, according to official figures compiled by the State Board of Health's Division of Vital Statistics, there were 7,162 babies born in this State, as compared with 6,071 in January, 1941, a gain of 1,091, or 18 per cent, for this one month.

Births for the calendar year of 1941 totaled 85,366, which was 4,395 in excess of the number reported in 1940. Only two months, January and November, showed a decline under the previous year. During the remaining ten months substantial gains were reported. A decline in deaths has accompanied the sustained gain in births.

An encouraging feature of the January, 1942, report, the first issued during the present calendar year, was the decline reflected in the infant mortality rate, which dropped from 68.7 in January a year ago to 60.7 last month, a decrease of eight points, while the downward trend in the maternal death rate continued. Although there were 7,162 live births reported in the State last month, there were only 30 maternal deaths, as compared with 32 during the corresponding month a year ago, the monthly rate having dropped from 5.3 to 4.2. There were no deaths from puerperal septicemia. Four such deaths occurred in January, 1941, and 53 during last year, but this figure was decidedly lower than the 1940 total, which was 112. This marked decline is attributed by physicians to new methods of treatment, which have proved highly successful.

* * *

Dr. Carl V. Reynolds, State Health Officer, has issued the following statement with respect to delayed birth certificates:

"In view of the emergency, the rush for certified delayed birth certificates now is unprecedented.

"The North Carolina law, as amended in 1941, provides that an application for a delayed birth certificate be made to the register of deeds of the county in which the applicant was born, and not to the State Board of Health. If all applicants would bear this in mind, it would save much time now devoted to unnecessary correspondence and would insure quicker service.

"A delayed certificate is the record of one who was born prior to October, 1913. Please bear this date in mind. If the applicant needs instruction as to what proof is necessary, the register of deeds, in each instance, will supply it. If the applicant knows what proof is necessary and furnishes it, the register of deeds will see the matter through.

"The only fees necessary are those prescribed by law to be paid registers of deeds for recording births and furnishing certified copies of certificates.

"Only those persons born after October, 1913, should apply to the State Board of Health at Raleigh—all others to registers of deeds, as pointed out above."

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During the past few days widespread publicity has been given the fact that the federal government has found it necessary to curtail, to some extent, the preparation and sale of certain vitamins.

"This need cause no undue alarm," it was pointed out here by Dr. Carl V. Reynolds, State Health Officer, who is also chairman of the State Nutrition Council.

"One need only to know a few elementary facts about nutrition to realize that, in this country, the average person can have all the essential vitamins by following a few simple guides," he continued. "Fresh foods and those that have been properly preserved by methods that are now well-known contain all the natural vitamins necessary for a well-balanced metabolism. Information as to these methods can be furnished by the Extension Department of the North Carolina State College at Raleigh, which is doing a splendid work along this line.

"Diagnoses of vitamin deficiencies should, of course, be made by competent physicians. Where

these deficiencies are serious, it may be necessary to supplement the natural vitamins with processed ones.

"This whole matter may be summed up in the slogan coined by the eminent nutritionist, Dr. E. V. McCallum, who said: 'Eat what you want, after you have eaten what you should.' In other words, eat every day the necessary amounts of protective foods; and, after that, eat whatever your appetite calls for."

* * *

Dr. Carl V. Reynolds, State Health Officer, has announced receipt of a telegram from Dr. E. R. Coffey, of the United States Public Health Service in Washington, stating that the Office of Production Management has stopped releasing cadmium for use in the manufacture of food containers.

Recently, Dr. Reynolds, at the request of Federal Security Administrator, Paul V. McNutt, issued a warning against the use of cadmium-plated food utensils because of the fact that a number of cases of food poisoning had been traced to this source.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE

At the beginning of the winter quarter, there were 247 medical students—74 first year, 62-second year and 111 juniors and seniors.

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On November 11, 1942, Dr. Michael Heidelberger, of the Department of Medicine of the College of Physicians and Surgeons, New York City, spoke to the Duke Medical Society on "Recent Advances in the Knowledge of Complement and Its Functions."

* * *

The following have addressed the staff and students: December 10, 1941—Dr. J. M. McIntosh, Professor of Public Health, University of Glasgow, Scotland, on "The Medical Student in War Time"; January 14, 1942—Mrs. Mary P. Diaz, of Puerto Rico, on "Occupational Therapy in Puerto Rico"; February 11—Ralph Linton, Professor of Anthropology at Columbia University, New York City, on "Culture in the Normal Personality".

* * *

Dr. R. W. Graves, Assistant Professor of Neurology, has been appointed as one of the Army Consultants on Meningitis.

* * *

Dr. J. M. Ruffin, Associate Professor of Medicine, has been appointed as one of the Army Consultants on Tropical Diseases.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. Herman C. Mason has been appointed Associate Professor of Bacteriology and will begin his work in the spring quarter of this year. Dr. Mason had his work in Bacteriology at the University of Illinois and in the Department of Immunology in the School of Public Health of Johns Hopkins University.

* * *

Dr. W. R. Berryhill, Dean of the School of Medicine, attended a meeting of the Association of American Medical Colleges and of the Council on Medical Education and Hospitals of the American Medical Association, February 14 to 17.

In addition to the Postgraduate Courses in Medicine held in Durham, Fayetteville, Raleigh and Kinston, two additional courses sponsored by the University Medical School and the Extension Division will be given in the late spring in Gastonia and Salisbury. Meetings will be held in Gastonia on Mondays and in Salisbury on Tuesdays of each week from March 30 through May 5, 1942. The program for both courses is as follows:

March 30, 31—Diagnosis and Treatment of Anemias—Dr. Roy R. Kracke, Emory University, Atlanta, Ga.

April 6, 7—Pediatrics—Dr. Aims C. McGuinness, University of Pennsylvania, Philadelphia.

April 13, 14—Surgery—Lecturer to be announced.

April 20, 21—Heart Disease—Dr. Samuel A. Levine, Harvard University, Boston.

April 27, 28—Obstetrics—Dr. Robert E. Seibels, Columbia, S. C.

May 4, 5—Medical Problems of the Army and Navy—Lecturer to be announced.

* * *

The entire second-year class in the School of Medicine, forty-one students, have been transferred to the following four-year schools to complete their training for the M.D. degree.

University of California—Jerry Gavce; Cornell—B. K. Swan; Duke—O. Watts Booth; Emory—Edmund D. Bennett, J. H. Miller; Harvard—H. W. Harris, T. L. Murphy, Beecher W. Sitterson; Jefferson—Chas. H. Edwards, John F. Lynch, Robt. A. McLemore, Geo. W. Plonk, C. L. Putzel, Wm. Henry Shull, R. E. Sumner; Johns Hopkins—R. S. Perrin; Maryland—Worth Kirby, I. Floyd Nesbitt, John T. Stegall; McGill—Louis D. Hayman, Hunter Heath; New York Medical College—Hillard Gold, Wm. Tenenblatt; Northwestern—Wm. O. Beavers, Harry W. Sparrow; University of Pennsylvania—F. A. Blount, James E. Davis, John B. McDewitt, Baxter G. Noble, J. D. Piver, Hugh Smith; South Carolina—Richard E. Hedrick; Vanderbilt—B. R. Williams; Medical College of Virginia—Robert P. Beckwith; University of Virginia—Henry Boone, Willard C. Hewitt, Wm. Edwin Hoy, Wm. Lunsford Long; Washington University—J. Harry Allen, Alfred Costner, I. W. Rose.

* * *

Dr. William Allan, Professor of Medical Genetics of the Bowman Gray School of Medicine of Wake Forest College, lectured on "Heredity and Disease" on February 12 to the students and faculty of the Schools of Public Health and Medicine.

* * *

Dr. Manuel B. Marquez Escobedo, Director of the training station for public health personnel connected with the School of Public Health of Mexico, spent a week during February visiting the School of Public Health of the University of North Carolina, the Orange-Person-Chatham District Health Department and the State Board of Health at Raleigh.

* * *

Miss Naomi Deutsch, Director of Public Health Nursing of the U. S. Children's Bureau, Washington, spent several days in Chapel Hill during February, where she visited the Department of Public Health Nursing of the School of Public Health.

* * *

Dr. George W. McCoy, formerly Medical Director of the National Institute of Health, and now Professor of Preventive Medicine at the School of Medicine of Louisiana State University, New Orleans, spent the week of February 15 to 21 in Chapel Hill. Dr. McCoy gave a series of lectures on tularemia and leprosy for the students in the School of Public Health.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. C. C. Carpenter, Dean, attended the Congress on Medical Education held in Chicago on February 13-16, 1942.

* * *

The Interurban Obstetrical and Gynecological Club met at the Bowman Gray School of Medicine on February 23.

* * *

A joint meeting of the faculty of Wake Forest College and the faculty of the Bowman Gray School of Medicine was held at the Williams Club in Wake Forest on March 3, 1942. Moving pictures of the medical school plant and the North Carolina Baptist Hospital were shown by Dr. James F. O'Neill, a member of the faculty of the medical school. Thirty new members of the faculty of the medical school were introduced by Dr. C. C. Carpenter, Dean.

* * *

Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association* will be the guest of the medical school on March 13. Dr. Fishbein will address the Winston-Salem Chamber of Commerce on that date and will be introduced by Dr. Donnell Cobb, President-Elect of the Medical Society of the State of North Carolina.

* * *

The American Association for the Study of Neoplastic Diseases will meet at the medical school on April 23, 24 and 25.

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Society heard Dr. Dudley W. Smith, formerly with the American Hospital in Britain, speak on "War Injuries and War Medicine" on March 2.

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society held one of the largest meetings in the history of the Society at the Sheraton Hotel in High Point on February 5. The topic of the meeting was "The Physician and the War Emergency", and the speakers were General Henry C. Coburn and Captain Everett I. Bugg, both of the army medical corps stationed at Fort Bragg. General Coburn's subject was "How Doctors Help in National Defense", and Captain Bugg spoke on the "Treatment of Compound Fractures Among War Casualties".

Dr. Dennis B. Fox, Dr. William B. Dalton, and Dr. J. E. Young were elected to membership in the Society. Officers of the Society for 1942 are Dr. M. D. Bonner, President; Dr. H. F. Starr, Vice President; Dr. A. Ray Dawson, Secretary; and Dr. J. L. Cook, Treasurer. Delegates to the State Medical Society are Dr. Fred M. Patterson, Dr. B. E. Rhudy, Dr. George Wood, Dr. C. T. Whittington, and Dr. I. T. Mann.

HALIFAX COUNTY MEDICAL SOCIETY

Dr. E. L. Persons of Duke University was the guest speaker of the Halifax County Medical Society at its meeting on February 13. His subject was "Pneumonias Not Responding to Sulfonamide Therapy". The Society voted to adopt a plan of examining junior and senior high school students for remediable defects.

HAYWOOD COUNTY MEDICAL SOCIETY

The Haywood County Medical Society held its February meeting at the Haywood County Hospital. Dr. J. L. Reeves of Canton gave a paper on "Circulatory Diseases".

AMERICAN UROLOGICAL ASSOCIATION

The American Urological Association, South-eastern Section will meet at the Patten Hotel in Chattanooga, Tennessee, on March 19, 20, 21.

This meeting is not only for urologists but for all members of the medical profession. All physicians who are not members will be registered free of charge.

THE SECOND AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The Second American Congress on Obstetrics and Gynecology will be held in St. Louis, Missouri, April 6-10, 1942. This five day program will include general assemblies and individual group meetings on medical, nursing, public health and institutional administrative problems relating to the factual and scientific aspects of maternal and infant care.

The problems will be presented by national authorities as scientific papers, demonstrations, round tables, and in addition, personal interviews and consultations. The general medical profession is urged to join this Second American Congress. A membership fee of \$5.00 will include registration fee for the St. Louis meeting.

SOUTHEASTERN SURGICAL CONGRESS

The Southeastern Surgical Congress held its thirteenth annual Post-Graduate Assembly at the Biltmore Hotel in Atlanta March 9, 10 and 11, 1942. War Time medicine and surgery presented by distinguished authorities was a prominent feature of the program. In addition to the regular papers the following special papers were given:

"The Medical Profession and War Duties"—by Dr. Fred Rankin, Lexington, Ky.

"How Can the Medical Profession Augment National Efficiency During War Time?"—by Col. Leonard G. Rowntree, Washington, D. C.

"Medical and Surgical Service in the Training Camps"—by Col. Sanford W. French, Atlanta.

"Early and Late Treatment of the Face and Jaws As Applied to War Injuries"—by Dr. Robert H. Ivy, Philadelphia, Pa.

"The Part the Railroad Surgeon May Play in the National Emergency"—by Dr. Joseph D. Collins, Norfolk, Va.

"War and the Nutrition of the Nation"—by Dr. J. S. McLester, Birmingham, Ala.

"The Medical Profession in the South in Time of War"—by Dr. Julian L. Rawls, Norfolk, Va.

"Field and Hospital Services for Civilian Casualties"—by Dr. George Baehr, Washington, D. C.

Mr. Paul V. McNutt, Washington, D. C., addressed the Congress on the Preparedness Program.

NEWS NOTES

Dr. William P. Knight of Greensboro died on February 3.

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Dr. N. F. Lancaster of Waynesville has volunteered his services in the Army, and has been sent to Camp Gordon, Augusta, Georgia.

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Dr. J. G. Tillery has left Enfield to enter general practice in Wilson.

AUXILIARY

HYGEIA

The *Hygeia* Committee of the State Medical Auxiliary was created at the 1931 meeting of the Auxiliary in Durham. This was done at the suggestion of Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*. He felt that as an organization interested in health and medical problems we could build up the circulation of *Hygeia* in the state. This is the one job the American Medical Association has given the Auxiliary to do. We must not fail.

Hygeia is the authentic health magazine for lay readers published by the American Medical Association. *Hygeia* presents scientific health information in an interesting and understandable form for lay readers. We must do our part to get it before the reading public. Any one who has it within his or her power to help *Hygeia* disseminate its information to the laity, and fails to do so, is neglecting part of his duty in the National Defense program. *Hygeia* has always been in the forefront of national defense. It has been concerned with the health of the individual from the prenatal period to the end of life. Its main objective is health education for the purpose of building a more healthful and therefore a stronger and more efficient nation. Food and nutrition, keeping physically fit, maintaining a healthy mental attitude—all these points are vital today in our strenuous war program. *Hygeia* supplies reliable information on these subjects.

Women's organizations are focusing their attention on problems of health for defense. It is our responsibility as wives of doctors to refer them to *Hygeia*, where they can obtain authentic information from experts. We must assist these organizations to become health conscious and health wise.

A year's subscription to *Hygeia* is \$2.50. Of this amount our Auxiliary receives a percentage commission. This money goes to the McCain Endowment Fund, which seeks to raise \$10,000 to insure the maintenance of the McCain Bed at the State Sanatorium. Any physician, nurse, medical student, or member of a physician's family suffering from tuberculosis may occupy this bed and the Stevens bed maintained at Western Sanatorium. The Auxiliary receives credit only for subscriptions sent through the *Hygeia* Chairman.

The quota for the North Carolina Medical Auxiliary is 416 subscriptions this year. The quota assigned is the number of paid-up members in the Auxiliary at the close of the preceding fiscal year. North Carolina has never come anywhere near reaching its quota. If every doctor's wife in North Carolina would secure just one subscription, we could more than double the quota. If you would like to subscribe to *Hygeia*, or know some one who will subscribe, please send the name, address and \$2.50 to Mrs. W. G. Byerly, Lenoir, N. C., and the subscription will be entered promptly. Remember every subscription you send in will be of benefit to the medical and nursing professions both directly and indirectly, and will disseminate authentic health information to the public.

MRS. W. G. BYERLY,
Chairman of *Hygeia*.

NOTICE

Haddon Hall will be the headquarters for the Annual Meeting of the Woman's Auxiliary to the American Medical Association, which will be held in Atlantic City, New Jersey, June 8-12, 1942.

Requests for reservations should be sent immediately to Haddon Hall, Atlantic City, New Jersey.

The individual physician must protect the families in his care, and through them the community, by urging physical examination of domestic employees. Repeated emphasis on the necessity of this should result in the earlier diagnosis of tuberculosis and in the prevention of exposure to infants and children from this source of infection. An annual health certificate declaring freedom from syphilis, gonorrhea and tuberculosis should be the requisite for the position of nursemaid.—David V. Shar, M.D., *Journal-Lancet*, June 1940.

Any Physician May Exhibit "When Bobby Goes to School" to the Public.—Under the rules laid down by the American Academy of Pediatrics, their new educational-to-the-public film "When Bobby Goes to School" may be exhibited to the public by any licensed physician in the United States.

All that is required is that he obtain the endorsement by any officer of his county medical society. Endorsement blanks for this purpose may be obtained on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

Such endorsement, however, is not required for showings by licensed physicians to medical groups for the purpose of familiarizing them with the message of the film.

"When Bobby Goes to School" is a 16-mm. sound film, free from advertising, dealing with the health appraisal of the school child, and may be borrowed by physicians without charge or obligation on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

BOOK REVIEWS

Diseases of the Blood and Atlas of Hematology. By Roy R. Kracke, M.D., Professor of Pathology and Bacteriology, Emory University. Second edition. Price, \$15.00. Philadelphia: J. B. Lippincott Company. 1941.

This book retains its place as the best work in English on diseases of the blood. In the second edition Dr. Kracke has added new material on the important subjects of fractionation of liver extract, hemolytic anemias, hemoglobinuria, the action of drugs on the blood, hemoglobin and its derivatives, and the porphyrin compounds. Material is also included on blood transfusion and the operation of a blood bank. Other additions to the book are discussions of osteosclerotic anemia, achrestic anemia, ovalocytosis, Hodgkin's disease, histoplasmosis, and much material on vitamin K.

Dr. Kracke has placed before the medical profession a comprehensive summary of the present status of our knowledge of the diseases of the blood and blood forming organs. Hours with this book are well spent. Many of the color plates are poor, but even with this drawback the book is highly recommended.

Functional Pathology. By Leopold Lichtwitz, Chief of the Medical Division of the Montefiore Hospital; Clinical Professor of Medicine, Columbia University, New York. 570 pages, with 198 illustrations. Cloth. \$8.75. New York: Grune & Stratton, 1941.

The present volume attempts to analyze the mechanism of symptoms in relation to the signs of disease and to coordinate the clinical findings with functional disturbances. A number of clinical conditions are taken up from this refreshing and interesting viewpoint. Particular emphasis is placed on the role of the hypothalamus and vegetative centers, which are invested with an importance usually ignored. Until more is known of the fundamental physiology of the hypothalamus there will be a tendency to attribute all obscure functional disturbances to hypothalamic disorder. Nevertheless, there can be no doubt that the hypothalamic centers play an important role in the animal economy and are responsible for many dysfunctions (e. g., that observed in Froelich's syndrome, certain instances of diabetes insipidus, etc.) hitherto erroneously attributed to hypophyseal disturbance.

Although the book is, in general, lucidly written, more careful editing would have avoided such Teutonic sentences as the following (quoted from p. 11): "Along the doubling of the weight of the heart is bound to add 5 per cent to the total metabolism." "Deviations of the basal metabolic rate, decrease as well as increase, are found in Bright's disease."

The principal criticism offered to the present volume is the neglect of recent work which in many cases contradicts earlier work quoted. Thus, the antihypertensive action of adrenal cortical therapy is cited (p. 165), although all recent work has repudiated this concept; the chapter on hypertension ignores all the recent basic contributions. In spite of these criticisms, the reader will find much to stimulate his interest and many original concepts of everyday medical problems.

The publishers, who with the present volume enter the medical publishing field, are to be congratulated for an excellent technical job in book-making.

Symptom Diagnosis. By Wallace Mason Yater, M.D., M.S., (in Medicine), F.A.C.P., Professor of Medicine, Georgetown University School of Medicine; Physician-in-Chief, Georgetown University Hospital; Physician-in-Chief, Gallinger Municipal Hospital, Washington, D. C. Fourth Edition. 900 pages. Price, \$10.00. New York: D. Appleton-Century Company, 1942.

The usefulness of this work—originally written by Dr. Yater in collaboration with the late Dr. Wilfred M. Barton—is attested by the fact that this is the fourth edition. Its purpose, as expressed in the preface to the first edition, is "to aid the busy physician in the diagnosis of his case by allowing him to quickly reduce the number of possibilities to a small list; to prevent the oversight of important considerations; and to make the medical man more observant of the characteristics of the symptoms of disease."

It is virtually impossible to review such a book in detail, but it is enough to say that the fourth edition fully carries out the threefold purpose of the first one. After testing it out in a number of recent medical problems, this reviewer was impressed by the practicability of the work, by its up-to-dateness, and by the author's marvelous ability to compress a vast amount of information into a few words. To the busy practitioner it can be heartily recommended as worthy of a convenient place on his desk, where it will be at hand for daily use.

Chinese Lessons to Western Medicine. By I. Snapper, Professor of Medicine, Peiping Union Medical College, Peiping, China. With a foreword by George R. Minot, Professor of Medicine, Harvard University. 380 pages, illustrated. Price, \$5.50. New York: Interscience Publishers, Inc., 1941.

Just as a study of comparative anatomy and physiology is essential for an understanding of these subjects, so may a study of the diseases occurring in various branches of the human race contribute to our understanding of the afflictions of our local populace. The diseases occurring in any given area reflect the social, economic and geographic environment as well as the state of sanitation, medical care and diet of the population. It is for these reasons that a study of the peculiarities of disease as encountered in far-off China can be of value to the observant physician in broadening his concepts and teaching him the variability in characteristics manifested by a given disease.

The present volume covers a great variety of conditions, including nutritional disturbances, tuberculosis and other infectious diseases, renal, cardiac, vascular and hepatic disorders, as well as certain conditions more specifically associated with Oriental peoples. The book is well written and illustrated and should prove both interesting and instructive to the medical reader. He will find much to stimulate thought in the many observations recorded by Dr. Snapper in this valuable contribution to geographic medicine.

Encephalitis: A Clinical Study. By Josephine B. Neal, A.B., M.D., Sc.D., F.A.C.P., Associate Director, Bureau of Laboratories, Department of Health, New York; Clinical Professor of Neurology, College of Physicians and Surgeons, Columbia University. 570 pages, with illustrations and tables. Cloth, \$6.75. New York: Grune and Stratton, 1942.

The William J. Matheson Commission for Encephalitis Research was established in 1927, through the generosity of Mr. Matheson, himself a victim of encephalitis. The present monograph supplements the earlier reports published by this Commission in 1929, 1932 and 1939, and represents a survey of our knowledge of the various forms of this disorder. All aspects of the subject, including the epidemiology, complications, clinical course and treatment are critically reviewed.

It is only during the last quarter of a century that encephalitis has been recognized as a clinical entity, and although many aspects of the disease are still not elucidated, much knowledge has been accumulated. Dr. Neal and her collaborators have made a notable contribution with this excellent monograph, which should prove of the greatest value to all interested in the group of disorders designated as encephalitis.

William Henry Welch and the Heroic Age of American Medicine. By Simon Flexner and James Thomas Flexner. 539 pages. Price, \$3.75. New York: The Viking Press, 1941.

When the history of American Medicine is written, William Henry Welch will undoubtedly stand out as the one individual most responsible for the developments which have made this country pre-eminent in medical science. Welch was a leading spirit in the early years of Johns Hopkins, in the Rockefeller Institute for Medical Research, and in the International Medical Board. In fact, he had a hand in all decisions which, although taken for granted today, were at the time they were made of vital importance in determining the future of American Medicine.

The present book is written by Dr. Simon Flexner, Director Emeritus of the Rockefeller Institute and a former pupil and associate of Welch, and his son, James Flexner, author of several earlier volumes. The book is well written and carefully documented. It presents in an interesting way not only the biographical career of Welch but also the background of American medical history in the making, of which Welch was the leading figure.

Every doctor should be acquainted with this saga in order that he may understand and appreciate the currents of medical thought of which he himself is an integral, if perhaps only an inconsequential, part.

The Doctors Mayo. By H. B. Clapesattle. 812 pages with numerous plates. Price, \$3.75. Minneapolis: The University of Minnesota Press, 1941.

"They were born at the right time" is the keynote of this well written biography, *The Doctors*

Mayo. The first account that has been written of these three remarkable men—William W., William J., and Charles H. Mayo—whose lives spanned a century of American medicine, "whose genius transformed a geographical pinpoint among the cornfields and dairy farms of Minnesota into a great starred capital in the world of medicine", reads like a history of medical progress rather than the biography that it is.

This interesting book, which is full of humorous anecdotes, describes frontier medicine vividly, through the lives of three men who were pioneers in many medical fields. One reads of the honors bestowed upon them and the criticisms to which they were subjected, all of which the Mayos received gracefully. Much of the story centers about the old Doctor Mayo, and rightfully so. Charlie Mayo once said, "The biggest thing Will and I ever did was to pick the father and mother we had."

H. B. Clapesattle has searched through files, old case histories, newspapers, letters and papers, and has gleaned a wealth of material, which he has organized into a fitting tribute to the memory of these famous men.

What Price Alcohol? By Robert S. Carroll, M.D., Medical Director, Highland Hospital, Asheville, North Carolina. 362 pages. Price, \$3.00. New York: The Macmillan Company, 1941.

Dr. Carroll, who is founder and medical director of Highland Hospital in Asheville, North Carolina, has written a very readable book concerning what he considers the dangerous menace of alcohol to society. Dr. Carroll is not one of those medical apologists for alcohol who have blossomed into print during the past few years. In fact, it may be said that he goes to the other extreme in feeling concern about the use of alcohol even in what has been called "moderation".

Dr. Carroll agrees with most of the other writers on this subject that total abstinence is a necessity for the addict. Dr. Carroll's monograph is particularly appropriate in view of the fact cited in the book that one large insurance company has increased its proportion of rejections on the grounds of "heavy alcoholic indulgence" from 12 to 34 per cent during the past ten years. Dr. Carroll has had long experience in the handling of alcoholic patients and his book is rich both in practical points and in a philosophical discussion of the more fundamental problem of alcoholism.

Any physician who is giving particular attention to the problem of alcoholism would profit by the addition of this book to his library.

Necropsy. By Bela Halpert, M.D., Assistant Professor of Pathology and Bacteriology, Louisiana State University. 75 pages. Price, \$1.50. St. Louis: The C. V. Mosby Company, 1941.

This is a small, inexpensive guide for those interested in acquainting themselves with the method of removal and examination of organs advocated by Anton Khon.

Sulfanilamide and Related Compounds in General Practice. By Wesley W. Spink, Associate Professor of Medicine, University of Minnesota Medical School. 256 pages. Price, \$3.00. Chicago: The Year Book Publishers, Inc., 1941.

Sulfanilamide and its derivatives have become so invaluable in medical practice in such a comparatively short time that the average practitioner has been unable to keep up with the rapid advances in this field of chemotherapy. The book under consideration will clarify for the practitioner such problems as the indications for the sulfonamides, which one to use in any given case, dosage, administration, and toxicity. The book is based on the personal experience of the author and on the extensive literature extant on the subject. It is as up-to-date as any volume on a subject under active current investigation can be.

Methods of Treatment in Postencephalitic Parkinsonism. By Henry D. von Witzleben, M.D., Elgin State Hospital, Elgin, Illinois. 135 pages. Price, \$2.75. New York: Grune and Stratton, 1942.

This excellent monograph, bringing up to date the available information on the management of postencephalitic Parkinsonism, fills an important niche in the literature on this subject. The author concerns himself principally with methods of therapy, utilizing only a very short section of the book for a discussion of diagnoses and differential diagnoses. The discussion of therapy he divides into ten headings—namely, chemotherapy, serum therapy, vaccine treatment, intralumbar methods, surgical therapy, fever therapy, roentgen therapy, treatment with medicaments, alkaloid therapy, and outline of treatment by physical exercises and calisthenics.

Considerable space is given to the discussion of the so-called Bulgarian treatment. An interesting aspect of this section is the fact that specific information as to the proprietary preparations of the Bulgarian belladonna root is given.

For those physicians who have fallen into a fatalistic way of thinking regarding the unfortunate sufferers with this disease, Dr. Von Witzleben's monograph will serve a salutary purpose, although it is too true that most of these patients can not be cured. Many of them can be helped remarkably, however, by the proper application of our knowledge regarding alkaloidal and other therapy.

Dr. Darby, Noted Scientist in Vitamin Fields, on Borden Staff

The Borden Vitamin Company, which has been bringing into its fold a number of research and production leaders in that field, announces that Dr. Hugh H. Darby, distinguished Columbia scientist and author of many authoritative works, has joined its staff for research and development in the production and application of vitamins and hormones.

Dr. Darby, who has been with the Department of Biochemistry of the College of Physicians and Surgeons for the past seven years as research associate, is a specialist there on vitamins and hormones, achieving wide attention for his work on the extraction and physiology of sex hormones.

Among other distinctions, Dr. Darby is noted as the discoverer of the existence of Vitamin D in plant life, and for his spectrographic research on vitamins A, D and K. He originated the system, widely used by the Department of Agriculture, of heat treatment for the destruction of harmful insects.

In Memoriam

JOSEPH E. NOBLES, M.D.

It is with extreme regret that the members of the Pitt County Medical and Dental Society acknowledge the loss of one of the Society's senior and most faithful members, Dr. Joseph E. Nobles, on December 13, 1941.

Dr. Nobles was born on April 14, 1874, in Pitt County, and spent his entire life there. He was educated in the public and private schools of Greenville and attended the University of North Carolina, where he began the study of medicine. He continued this study at the Jefferson Medical College in Philadelphia, from which he graduated in 1899.

Following graduation he practiced medicine for a few months near Grifton and for a short while at Vanceboro, North Carolina. He then established himself in Greenville, where he continued to practice until his death. He always maintained a keen interest in civic affairs, serving both as a city alderman and as a member of the Selective Service Board during the World War. From 1926 until his death he served with distinction as college physician to Eastern Carolina Teachers College. Dr. Nobles was a director of the National Bank of Greenville and engaged in extensive farming operations.

He was married in 1911 to Miss Argen Hardy. He is survived by his wife and children: Mrs. Everett Huggins of Wilmington, Mr. J. E. Nobles, Jr., and Miss Lucy Nobles of Greenville.

Throughout his professional career Dr. Nobles maintained an active interest in the advances of medicine through continued wide reading and through faithful attendance at medical meetings. He was devoted to the Pitt County Medical Society, and once served as President of this organization. He was an honorary member of the North Carolina Medical Society and a Fellow of the American Medical Association.

Dr. Nobles was a man of prepossessing appearance, meticulous in dress and speech. His life was one of simplicity, in which the fundamental values of honesty, sincerity and frankness were recognized by all. To know Dr. Nobles was to like and admire him. His acquaintances in Pitt County were probably more extensive than those of any of his contemporaries. In his passing his family, the medical profession, and the community lose a valued father, husband, physician and citizen.

Therefore be it resolved that these expressions be submitted to the family, the *North Carolina Medical Journal* and the daily papers of Greenville, and be recorded in the minutes of the Pitt County Medical and Dental Society.

T. G. Basnight,
M. T. Frizzelle,
F. P. Brooks,
Resolution Committee.

ANNOUNCEMENT FROM THE PHYSICIANS CASUALTY ASSOCIATION

"In these days when we are all confronted with a question of shortages in various commodities and an increase in the price of those obtainable, we are happy to announce that not only will we continue to carry our policyholders at no increase in the cost of their accident and health insurance, but we adopted a resolution to the effect that there shall be no restriction under our policies by reason of Army, Navy or Marine Service, irrespective of where such Service may take the policyholder.

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THE DIAGNOSIS AND TREATMENT OF UPPER RESPIRATORY DISEASES

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In order to understand clearly some of the factors involved in upper respiratory infections, it is necessary to begin with the early development of the nose. In the fetus, even at one hundred and twenty days, we begin to see definite nasal formation and distinct cavities of some of the nasal accessory sinuses. At birth the antrum occupies a small oval space to the inner side of the orbit. Its later development is downward, and it assumes its full shape after eruption of the permanent teeth. The maximum development is attained between the fifteenth and eighteenth years. The ethmoidal sinuses are present at birth, but assume little importance until the second or third year of life. The frontal and sphenoid sinuses make their appearance in the third year. So we find that in earliest childhood the nose and its related sinuses are developed sufficiently to become foci of infection.

The nasal mucosa, continuing into the related accessory sinuses, is particularly constructed to combat the invasion of offending organisms. The ciliated epithelium of the mucous membrane has a definite wave-like action to repel invading micro-organisms. The submucosa contains goblet-like glands which produce an antiseptic, mucoid substance to incorporate germs and irritating foreign particles into a gelatinous mass which is usually diverted to the intestinal tract.

It is seen, then, that the first line of defense against infection of the upper respiratory tract is the anatomical construction of

the nose and its physiological reactions. If these are normal, their functions can be effectively carried out. In this region there is found the greatest formation of lymphatic glands to prevent invasion of organisms into deeper structures. A well-developed chain of resistance here often prevents serious conditions in other parts of the body. However, as in any other organ, if pathological changes occur, local resistance to invading organisms is lessened.

Our first duty begins with the infant and the growing child. Diet must be given the greatest consideration. Every child should be given the best possible opportunity to begin life with a strong, healthy body which is able to overcome early infections by natural resistance.

The Common Cold

In any discussion of acute upper respiratory infections due consideration must first be given to the so-called "common cold". For many years scientists have been working to determine the exact etiological factors of the common cold. At the present time this problem still remains unsolved, although much valuable information has been accumulated in recent years concerning the bacterial nature of this disease.

The condition generally referred to as cold is characterized clinically by hyperemia, congestion and disturbances in secretion of the mucous membranes lining the nose, throat, and bronchi. Symptoms of dryness, irritation, cough and obstructed breathing are usually present, while general symptoms

of aching, malaise, headache and fever are frequently associated with them.

For the purpose of description the classification given by Cecil⁽¹⁾ is used: non-contagious colds, contagious colds, and influenza.

Non-contagious colds are produced by some local reaction in the mucous membrane, whereby its normal power of resistance is so lowered that endogenous organisms may enter the tissues. Vasomotor changes, systemic disturbances, local foci of infection, heat, cold, changes of clothing, injuries and irritation of the mucosa by chemical agents such as chlorine and bromine all play an important part in this type of cold.

In contagious colds, the infecting agent is exogenous and is usually some form of virulent organism, such as the pneumococcus, the streptococcus or the influenza bacillus. Some contend that the initial cause is a filtrable virus, and that complications are due to the invasion of secondary organisms.

The influenzal form may be endemic, epidemic or pandemic.

There is little exact information at this time regarding the true etiology of this disease. Many maintain that a filtrable virus is the cause, while others consider Pfeiffer's bacillus the important organism. Studies of the bacteriology of the upper respiratory tract have engaged the attention of many investigators. It has been found⁽²⁾ that the micro-organisms appear on the mucous membrane of infants about twelve hours after birth, and from this time on are always present. The bacterial flora at this early period is comparatively simple, being composed of organisms which are introduced while nursing. Those usually found are *Staphylococcus albus*, *Staph. aureus*, *Micrococcus tetragenus*, a few non-hemolytic streptococci and transients of variable characteristics. As time goes on many other organisms appear in this region. Quite a number are pathogenic; others may become so under certain conditions. A certain group adapt themselves to growth on the mucosa and become intimately associated with it.

Bloomfield⁽³⁾ is of the opinion "that cultures made repeatedly from the throat of a

healthy individual over a considerable length of time reveal two groups of organisms. In the first place there is a group of non-hemolytic streptococci and gram-negative cocci, which is constantly present and seems to constitute the true normal flora of the throat in the sense of actually living its complete life history in that environment. In addition to this group many other organisms may be recovered from normal throats, but their presence seems to be only transient. They disappear in a few days, as a rule, just as foreign organisms do when experimentally introduced."

In a bacteriologic study of 63 cultures of the chief flora in the rhinopharynx, Myer Solis-Cohen⁽⁴⁾ found, in order of frequency: *Micrococcus catarrhalis* (57 per cent), *Staphylococcus pyogenes albus* (54 per cent), *pseudo-diphtheria bacillus* (30 per cent), *Streptococcus viridans* and *Staphylococcus pyogenes aureus* (27 per cent), non-hemolytic streptococcus (24 per cent), pneumococcus (21 per cent), hemolytic streptococcus (19 per cent), unclassified staphylococci (11 per cent), and Friedlander's bacillus (8 per cent). To this list could be added many other organisms which have been recovered from this region at different times by other observers. With such a variety of organisms capable of producing variable reactions it is not surprising that infection is so common in the upper respiratory tract. However, there are certain factors which control the action and elimination of bacteria in this region.

One of the most important is the anatomical construction of the nose and throat. The nose is particularly developed to prevent the entrance of organisms into the deeper air passages. Hasslauer⁽⁵⁾, and Thompson and Hewlet⁽⁶⁾ have demonstrated that many infected bacteria are arrested by the moist vibrissae at the anterior nares, and are kept away from the inner recesses of the nose. When air is inspired the current strikes against the turbinate bones, where it is broken up and deflected in all directions. The moist film of mucus covering the mucosa is especially prepared to incorporate remaining organisms so that they can be carried backward to the throat by the action of ciliated epithelium.

1. Cecil, R. L.: Common Cold, Its Prevention and Treatment, *M. Clin. N. America* 8:103 (July 19) 1924.

2. Bloomfield, Arthur L.: Adaptation of Bacteria to Growth on the Human Mucous Membranes, With Special Reference to Throat Flora of Infants, *Bull. Johns Hopkins Hosp.* 30:61 (Feb.) 1922.

3. Bloomfield, Arthur L.: Significance of the Bacteria Found in the Throats of Healthy People, *Bull. Johns Hopkins Hosp.* 32:33 (Feb.) 1921.

4. Solis-Cohen, M.: Rhinopharynx as a Site of Focal Infection, *Ann. Otol. Rhinol. and Laryngol.* 33:235 (Sept.) 1924.

5. Hasslauer: *Centertalle-Bakteriologie*, 1. *Obt. Ref. B-I* 37:1, 1906.

6. Thompson and Hewlet, in *Lancet*, 1:86, 1896.

In the mouth many bacteria are eliminated by the flushing action of the secretions. This is assisted by muscular contractions in the throat during the act of swallowing, so that organisms are rapidly directed backward into the esophagus. The value of tenacious mucus in holding organisms is also an important factor here. The bactericidal action of saliva⁽⁷⁾ on certain organisms is of some importance.

The normal resistance of the epithelial layer of mucous membrane, combined with the phagocytic action of the underlying vascular supply, is of considerable importance in preventing the invasion of organisms. However, when there is some disturbance in the protective mechanism, such as is often produced by vasomotor changes, local irritation, and injuries of the mucosa (which may be of mechanical, chemical or thermal origin), the susceptibility to bacterial invasion is much greater. The incidence of infection is also influenced by the number, character and virulence of the offending organism. Many theories about the relation of various bacterial factors in the etiology of the cold have been offered. McCallum⁽⁸⁾ feels that chilling of the skin predisposes in some way to infection by the usual organisms found on the mucous membrane during health. Osborne⁽⁹⁾ considers colds contagious and believes that many different germs may be responsible. Mudd, Grant and Goldman⁽¹⁰⁾ are also inclined to this view.

Bloomfield⁽¹¹⁾ found that there is a marked similarity in the throat flora of normal persons and those suffering with colds. He does not feel that the usual throat inhabitants, such as staphylococci, streptococci, pneumococci or the influenza bacilli, cause colds, but that their development is made more favorable during an attack, and that they produce secondary complications. Jordan, Norton and Sharp⁽¹²⁾ found the throat flora in patients with colds to be similar to that found in health. Williams, Nevin and Gurley⁽¹³⁾ made a like observation. They also

reported that 39 per cent of the patients with colds had pneumococci as predominating organisms, as compared with 26 per cent of healthy subjects. Gordon⁽¹⁴⁾ found pneumococci in 35 per cent of patients with colds and in 21 per cent of healthy persons examined.

In 1914, Kruse⁽¹⁵⁾ diluted nasal secretions of a patient with a common cold and introduced them into the noses of thirty-six volunteers. He claimed that 42 per cent became ill with the disease. Kruse believed that the exciting agent was a filtrable micro-organism, although he was unable to demonstrate the germ. Foster⁽¹⁶⁾ attempted to confirm the experiments of Kruse at a later date. He not only agreed with Kruse, but also claimed to have cultivated a minute anaerobic micro-organism similar to the "globoid bodies" of Flexner and Noguchi⁽¹⁷⁾. Experiments on the transmission of colds from man to man were carried out by Olitsky and McCartney⁽¹⁸⁾. They filtered the nasal secretions of infected patients and produced symptoms of cold in four men out of six in the test.

From this conflicting maze of opinions it is obvious that the specific agent causing colds has not been agreed upon. However, the mass of evidence indicates that sooner or later all colds can be considered infections⁽¹⁹⁾. This, after all, is the most important point for us as practical clinicians. With this knowledge we can advise the necessary precautions in preventing the spread of this most common disease and can outline specific measures for prophylaxis and treatment.

The public should be more carefully instructed as to the contagiousness of this infection. People should be made to realize that sneezing, coughing or spitting in public places is a pernicious practice. A simple globule of mucus from a carrier may contain many organisms which are pathogenic to some susceptible person, while producing no

7. Bloomfield, Arthur L.: Mechanism of Elimination of Bacteria From the Respiratory Tract, *Am. J. M. Sc.* 164: 854 (Dec.) 1922.

8. McCallum: Textbook of Pathology, Philadelphia, W. B. Saunders, 1918, p. 370.

9. Osborne, in New York State J. Med. 109:529, 1919.

10. Mudd, S.; Grant, S. B.; and Goldman, A.: Etiology of Acute Inflammations of the Nose, Pharynx, and Tonsils, *Ann. Otol., Rhinol., and Laryngol.* 30:1 (March) 1921.

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18. Olitsky, Peter K., and McCartney, James E.: Studies on Naso-Pharyngeal Secretions From Patients With Common Colds, *J. Exper. Med.* 38:427 (Oct.) 1923.

19. Looper, Edward A.: The Bacteriologic Factor in the Cause of Common Colds, *South. M. J.* 18:143 (Feb.) 1925.

symptoms in the host. The average person is indifferent to the ordinary cold and does not realize how many complications follow in its wake. Many cases of otitis media, mastoid infection, sinus disease, bronchitis and pneumonia could be prevented, if treatment was enforced during an attack.

The general death rate each year is much higher during January, February, and March, when colds are more prevalent. Improper ventilation, exposure to bad weather, and closer association of people during this time contribute to the spread of this infection.

Another point which emphasizes the bacterial nature of the common cold is the development of immunity following attacks. It is true the immunity may be of short duration, usually lasting about six to eight weeks. In the interim the patient can take unusual chances without developing symptoms. This short period of immunity can be explained as due to the localization of infection, which is limited to the mucous membrane, and to the low virulence of the organism causing the disease.

With the knowledge that immunity can be produced, many efforts have been made successfully to use vaccines in the treatment of colds. Autogenous vaccines of mixed cultures have given the best results, although stock vaccines have been used with some apparent success. The whole field of vaccine therapy is an interesting one for development. Since the use of chemotherapy the sulfonamides have been used with much success in the treatment of upper respiratory infections. Internal administration, supplemented by local application of the drug, has been very satisfactory in the majority of patients.

The Nasal Accessory Sinuses

It is generally agreed that symptoms of the common cold continuing for a period of more than two weeks mean that there is involvement of the nasal accessory sinuses. This is particularly true in infants and young children. Children with infected sinuses are irritable, anemic, and undernourished, and present all the symptoms associated with an active focus of infection. Furthermore, such infections retard the development of the sinuses themselves, creating an ideal condition for the continuance of a chronic disease.

It is a common practice to attribute all chronic colds and all cases with nasal discharge, regardless of the location, character or amount of secretion, to diseases of the tonsils and adenoids. It is often taken for granted that this is the only factor to be considered, although the true source of infection may be in the paranasal sinuses. We frequently encounter children who have had their tonsils and adenoids removed, but who do not get the desired relief from their symptoms. They state that their colds are as frequent and the nasal discharge as constant and as severe as before the operation. A situation of this kind can be avoided if more attention is paid to the sinuses before the tonsils and adenoids are removed. In all children with inflammatory lesions around the nose and throat, with the nasal symptoms predominant, the sinuses should be examined. Where there is a great deal of sneezing, congestion of the turbinates, and constant colds with thick, profuse nasal discharge, a careful investigation of the sinuses is called for. If the diagnosis is correctly made, treatment can be properly instituted and the results will be satisfactory.

While children are not as susceptible to diseases of the sinuses as are adults, the condition is frequent enough to require careful consideration. In fact, the subject requires more attention than is generally given to it by rhinologists. Haike⁽²⁰⁾ made an autopsy study of 394 children. He opened the sinuses of 62 subjects and found them diseased in 52 cases. The ages varied from 9 months to 13 years. Forty-seven cases had an infection of the maxillary antrum, 2 of the sphenoids, and 3 of the ethmoid cells. Dean and Armstrong⁽²¹⁾ investigated the sinuses in a group of children presenting the common symptoms of infected tonsils and adenoids. One hundred and forty-five cases were examined, and of this number 65 showed definite involvement of the sinuses. In a similar group of cases White⁽²²⁾ made x-ray studies of 50 children who had been admitted to the hospital for tonsillectomy

20. Haike; Beitr. z. pathol. Therap. d. oberen Atmungswege, Wiesbaden.

21. Dean, L. W., and Armstrong, M.: (a) Some Indications for Operation on the Nasal Accessory Sinuses in Children, *Laryngoscope* 31:273 (May) 1921; (b) Diseases of the Accessory Sinuses in Infants and Young Children, Including Bacteriologic Study, *Ann. Otol., Rhinol. and Laryngol.* 28:452 (June) 1919; (c) Occasional Necessity of Doing Radical Operations on Paranasal Sinuses in Children, With Report of Cases, *Ann. Otol., Rhinol. and Laryngol.* 29:602 (September) 1920.

22. White, F. W.: Pathologic Nasal Accessory Sinuses in Children, *Ann. Otol., Rhinol. and Laryngol.* 30:221 (March) 1921.

and adenoidectomy, and out of the 50 cases 41 showed pathologic sinuses.

In the early years of childhood the upper respiratory tract is particularly susceptible to infection and is generally involved in most of the exanthematous diseases. In practically every case of measles, whooping cough, diphtheria and scarlet fever, severe reactions are produced in this area. We are always on the alert for ear involvement following these diseases, but do we pay sufficient attention to nasal complications?

The sinuses are lined with mucous membrane similar in structure to that of the eustachian tube, and by the process of continuity can be readily infected. The numerous recesses and cavities adjoining the nasal fossae provide an ideal location for the implantation and development of organisms. If bacteria are placed upon the smooth, unobstructed mucous membrane of the mouth we know that they will be eliminated by the normal douching action of the oral secretions, as demonstrated by Bloomfield's work⁽²³⁾. However, when they lodge in obstructed crevices such as the tonsillar crypts, reduplicated nasal mucous membrane, or sinus cavities, they remain for a much longer time. If the body resistance is below normal, or if the predominating organisms are of a very virulent strain, the tissues may not be able to resist infection. When the sinuses become extensively infected, eradication of the disease is extremely difficult. Congested nasal mucosa, hypertrophied turbinates, septal deviations, and nasal cavities interfere with ventilation and drainage, thus prolonging a condition which could be easily eradicated in a more accessible environment.

Diagnosis

By early diagnosis and the application of conservative treatment, many extensive operative procedures can be avoided and serious complications can be prevented.

A careful history is necessary in making an early diagnosis. Repeated nasal infections or so-called common colds lasting more than two weeks usually indicate some involvement of the sinuses. Discharge may or may not be present, depending upon the amount of drainage. In children the diagnosis is much more difficult, because subjective symptoms can not be depended upon. Careful inquiry should be made to determine

if a child has had measles, scarlet fever, diphtheria or whooping cough, as the exanthematous diseases are usually complicated by severe nasal infections and sinus involvement.

In adults, the acute cases usually cause definite symptoms, such as pain, tenderness, headache, nasal discharge, and difficulty in breathing, which make the diagnosis comparatively easy. In chronic infections quite a different problem is presented. A certain number of cases show such definite local symptoms that a diagnosis is easily made, and this group gives us little trouble. It is the borderline case, with few, if any, helpful localizing symptoms, which gives us most concern. The cases in which the nasal symptoms are insignificant or are masked by certain general symptoms of toxic absorption, which divert our attention along other lines, are perplexing. This is especially true of cases with arthritis, indefinite rheumatic pains, digestive disturbances, malaise, headache, and vertigo.

Considering the anatomical structure and close relationship of the sinuses to other important structures, it is not strange that the most prominent symptoms come from these special organs. The most typical examples are eye lesions, cranial involvement, and reflex nervous phenomena.

During the past few years I have seen about 25 patients with distinctive manifestations of cerebral irritation caused by cerebral edema resulting from the absorption of toxins from a low-grade and unsuspected sinus infection. Some of these patients entered the hospital in a state of coma, and several had convulsions. All of the symptoms quickly cleared up with simple drainage, and the patients have remained cured.

In the diagnosis of these obscure cases, every available aid is required, and good x-ray plates are most important. The use of lipiodol makes them still more helpful. While entire dependence should not be placed on an x-ray plate, it is our most reliable objective method of examination. A clear plate will reveal the shape and size of the sinuses (whether they are fully developed, infantile, or walled off by septa) and the pathological state (hyperemia, a thickened membrane or empyema). It will also show foreign bodies such as teeth, as well as single or multiple polypi.

Every rhinologist should read and study his own x-ray plates. In my office I have my

23. Looper, Edward A.: Infections of the Nasal Accessory Sinuses in Children, *M. Clin. N. America* 21:13,3 (Sept.) 1937.

own x-ray equipment, and find it very convenient and satisfactory. Lipiodol injections can be made easily. Plates taken and developed by a technician can be presented to me in a short time for interpretation and study. In every patient who gives a history of recurrent nasal infections I make an x-ray of the sinuses, and it is surprising how many cases are discovered which, if clinical symptoms alone were depended upon, would have been overlooked²⁴.

Transillumination is unsatisfactory at best, and can not be depended upon for accurate diagnosis. Tenderness over the sinuses is not a constant symptom and is generally absent in the low-grade infections. Bacteriological smears and cultures do not give the desired information, because the upper respiratory tract is the natural habitation of many organisms, and it is difficult to determine when an area is actually infected.

We place most dependence upon the examination of the intranasal structures for abnormal changes; but, unfortunately, in many of these cases it is impossible to determine the presence or absence of infection by the local appearance of the tissue. The nasal mucosa may seem to be normal, the breathing space unobstructed, the turbinates of regular size, with little change in nasal secretion, while the patient has definite general symptoms of toxic absorption.

Treatment

A knowledge of the anatomical shape and position of the sinuses and the location of the ostia is important in treating sinus infections. The frontal sinuses being above, with their ostia at the most dependent portion, it is easy for this sinus to drain. This fact explains its satisfactory response to local applications and suction treatment, if treatment is instituted early.

Because of their location and large size, and the fact that their ostia are located at the upper inner boundary, spontaneous drainage of the antra, when once they are filled with pus is difficult. At best, no drainage can occur until the antral cavity overflows. Local astringent applications are of little use. The logical method of treatment is to establish drainage at the most dependent part, through the inferior meatus, by a

simple trocar and to irrigate the antrum with warm saline solution. Unless this is done the condition becomes chronic, and the antral cavity acts as a reservoir for pus. In time the membrane becomes diseased, and more radical measures are necessary to effect a cure. The sphenoids and ethmoids are more amenable to local treatment than are the antra.

The ethmoidal labyrinth is very susceptible to infection, and, on account of its honeycomb-like arrangement of cells, the infection is very difficult to eradicate after it has once obtained a foothold. The turbinates, because they are susceptible to hypertrophy and deviations of the septum are common, play an important part in the etiology and treatment of sinus diseases in this area. Surgical measures are often necessary to obtain ventilation and free drainage. Treatment, naturally, must be governed by the type of infection.

Most of the acute sinus infections respond quickly to treatment, and, as a rule, the prognosis is good. The local treatment consists in cleansing the nose with some warm alkaline solution such as normal salt or Dobell's solution, which frees the mucous membrane of secretions and a certain number of bacteria. After this, some astringent solution such as adrenalin or ephedrine and cocaine is applied. This shrinks the congested tissue and allows a certain amount of drainage. It is followed by a bland, soothing, oily spray. In acute cases we are often able to help the condition with suction treatment. The use of solutions of chloretone inhalant or ephedrine inhalant in croup kettles is soothing as well as beneficial.

Another type of sinus infection which is very common and is often associated with acute sinus conditions is known as vacuum frontal sinusitis, and is produced by congestion and hypertrophy in the upper nasal passages, so that the nasofrontal duct is closed. The air is absorbed in the sinus and a certain amount of suction is produced, with resulting hyperemia of the mucous membrane. This causes excruciating pain and headache. The treatment consists of shrinking the congested mucous membrane or removing the obstruction by operation. This condition is similar to an acute catarrhal otitis media, and the principle of treatment is similar.

Chronic diseases of the accessory sinuses are often neglected. Patients are often

24. Cooper, Edward A.: Infection of the Nasal Accessory Sinuses, West Virginia M. J. 23:710 (Dec.) 1929.

given the impression that they have a "chronic catarrh" which is incurable. This idea is remarkably prevalent among the laity, and many unfortunate victims are suffering who might be helped by proper treatment. Quite a number of these cases can be cured by local treatment, no operative procedures being necessary. In such cases we find suction very efficacious. Many times, however, no results can be obtained by local treatment, because the mucous membrane of the sinuses is so badly diseased that nothing short of extensive operations will eradicate the condition. This is often true in antral disease. Fortunately, most of the obstinate cases can be cured by a radical operation, the type of operation being determined by the etiology and duration of the disease.

Most cases of frontal sinus infection can be cured by conservative intranasal surgery. The nasofrontal duct being at the inferior wall of the sinus, drainage is not difficult after obstructions such as spurs, septal deviations or hypertrophied turbinates have been removed.

There are a certain number of cases which resist all efforts to effect a cure by intranasal surgery. With this group some external procedure is required. In the purely chronic cases, there is usually sufficient time to choose and perform any one of the classical operations which the operator likes best. In a small group, however, the development of symptoms and complications is so rapid that the quickest and safest form of drainage is required at once.

Complications

Orbital abscess is one of the most frequent and often the most dangerous complication of accessory sinus disease. A definite abscess is characterized by edema of the affected eye, lids and surrounding tissue. The eyeball is forced out and there is immobility of the extra-ocular muscles. With pus formation, there is elevation of temperature and increased leukocytosis. If the pressure is not relieved by free drainage vision may be affected. Many of these cases occur in early life.

Meningitis and brain abscess are serious complications of sinus disease and frequently terminate fatally. Fortunately, such cases are rare. The complications associated with any chronic focus of infection may be present with accessory sinus diseases in children.

Anemia, loss of weight, low, unexplained temperature, and gastrointestinal symptoms are often present. Any such group of symptoms calls for investigation and treatment of the sinuses.

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THE TREATMENT OF RESPIRATORY DISEASES IN CHILDREN

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Respiratory diseases are responsible for over one-third of the illness seen in private practice⁽¹⁾ and in hospitals⁽²⁾, and are especially important during the present war. They caused nearly twice as many deaths among American soldiers and sailors during World War I as did battle casualties⁽³⁾ (table 1). Unfortunately preventive measures, except in tuberculosis, diphtheria and pertussis, have had little effect.

Table 1. Comparison of Deaths from Respiratory Conditions and Battle Injuries in the U. S. Army and Navy During World War I⁽³⁾.

Cause	No. Deaths
Measles*	2,482
Rubella*	82
Diphtheria	225
Influenza	28,822
(Total Respiratory)	(31,611)
Battle Injuries	16,961

* Deaths due to respiratory complications.

The signs of respiratory disease—sore throat, stridor, cough, nasal discharge, epistaxis, dyspnea, rales and dullness—can be caused by thirty common and twenty rare conditions. Obviously, a physician cannot take into consideration all fifty every time he sees a patient with a "cold", but he should consider the twenty-seven in table 2, and concentrate on the more likely possibilities. He especially should consider the conditions for which adequate therapy is available, and not, as is the increasingly frequent practice, postpone the diagnosis until he has tried sulfonamide therapy for a few days; even though the sulfonamides are helpful in all respiratory infections except tuberculosis and diphtheria.

Presented December 9, 1941, before the Fayette County Medical Society, Montgomery, West Virginia.

1. London, A. H., Jr.: The Composition of an Average Pediatric Practice, *J. Pediat.* 10:762-771 (June) 1937.
2. Arena, J. M. and Harris, R. R.: The Frequency and Distribution of Diseases in Children, *South. Med. and Surg.* 97:520-522 (Sept.) 1935.
3. Davison, W. C.: The Reduction of Communicable Diseases Among Troops and Children During National Defense Program, *War Med.* 1:863-872 (Nov.) 1941.

Table 2. Respiratory Diseases in Children

Upper respiratory tract	Lower respiratory tract
Diphtheria	Bronchitis
Rhinopharyngitis	Pneumonia
Tonsillitis	Empyema
Laryngitis	Tuberculosis
Tracheitis	Pleurisy
Influenza	Foreign body
Otitis media	Lung abscess
Mastoiditis	Bronchiectasis
Sinusitis	Atelectasis
Cervical adenitis	Pneumothorax
Peritonsillar abscess	Psittacosis
Pertussis	Pleurodynia
	Fungus infections

Allergy

Hay Fever

Asthma

Diphtheria is the most important respiratory disease. It should be eliminated by immunization of all infants at the age of 9 months, but it is entirely too common and too frequently mistaken for a "sore throat" by the family and sometimes by the physician. Among 10 diphtheritic patients treated at Duke Hospital during one month, 8 had not been seen by a physician for an average of five days⁽⁴⁾, and of 9 other children suffering from diphtheritic paralysis during the preceding year, 7 were not taken to physicians until the onset of paralysis⁽⁵⁾. Every child who has hoarseness, bloody nasal discharge, laryngeal obstruction, dyspnea, or a membrane on the pharynx or larynx should, *without waiting for a report from a throat or nose culture or smear*, have 0.1 cc. of horse serum (diluted 1:10 with saline) injected intradermally, and if no redness appears within thirty minutes, should have an intramuscular injection of 10,000 units of diphtheria antitoxin⁽⁶⁾. This should be repeated twenty-four hours later if the infection continues to spread, or recurs later. If the patient is sensitive to horse serum (as

4. Davison, W. C.: The Medical and Hospital Facilities Available to Children in North Carolina, North Carolina M. J., 2:343-348 (July) 1941.

5. Arena, J. M., and Rasmussen, L. P.: Diphtheritic Polyneuritis, J. Pediat. 13:352-356 (Sept.) 1938.

6. Patients with marked laryngeal symptoms should be sent to a hospital *before* the antitoxin is given, because in these patients a tracheotomy may be necessary within a few minutes after the serum has been injected. To try to make a clinical differentiation between laryngeal diphtheria and "croup" or streptococcus laryngitis may be dangerous for the child; he should be sent to the hospital, given diphtheria antitoxin, placed in a steam tent or near a humidifier, and treated by suction or, if necessary, tracheotomy. The absence of diphtheria bacilli or of a membrane in the throat does not rule out diphtheria; throat and nose cultures may be negative in proven cases of diphtheria.

indicated by the appearance of a red wheal within thirty minutes), or has had asthma, eczema or hay fever, he should be desensitized by having small amounts of the diphtheria antitoxin given every thirty minutes. Far less harm is done by the unnecessary administration of diphtheria antitoxin than by delay. If fusiform bacilli and spirochetes are present, neoarsphenamine or sulfarsphenamine should be injected intramuscularly, because the patient may have Vincent's angina, and not diphtheria. Sulfonamide therapy⁽⁷⁾ is helpful for associated streptococcal and staphylococcal infections but *should not be substituted* for antitoxin. In severe (malignant) diphtheria, 100 cc. of sterile 25 per cent intravenous dextrose should be given very slowly, in addition to antitoxin, with or without insulin, four to six times daily; daily blood transfusions should also be given. A Schick test should be done three months after recovery, and if it is positive, the child should be immunized.

7. The choice of the drug, the dosage, the effective blood level, and the reactions depend on the patient and the infecting organism. Daily urinalyses (especially for red blood cells) and white and red blood cell counts, and the determination of the blood or urine concentration of the drug every two days, and bactericidal tests of the patient's organism with various sulfonamides are necessary. Spectroscopic examination of the blood for sulfhemoglobin and methemoglobin are required only when cyanosis is produced by sulfanilamide. The drug or dosage should be changed in accordance with these tests, or if hematuria or reactions occur, or the patient does not improve. The drug usually should be continued as long as the white blood cell count is elevated and a left Schilling count persists. As agranulocytosis may appear after the drug is stopped, a white blood cell count one month later is advisable. Sodium sulfapyridine and sulfadiazine have the widest range of bactericidal effect against organisms; sulfanilamide usually, but not always, is more effective in meningococcal and streptococcal infections, and diffuses better than the other drugs into the spinal fluid; sulfapyridine generally is better in the pneumococcal, and sulfathiazole in the staphylococcal and dysenteric varieties. Sulfadiazine diffuses into the pleura, peritoneum and spinal canal.

The following dosage usually will maintain an effective blood concentration of 10 mg. of sulfanilamide and sulfadiazine per 100 cc., 8 mg. of sulfapyridine, 5 mg. of sulfathiazole, and 1 or 2 mg. of sulfaguandine. An initial dose of 1 to 3 Gm. (15 to 45 grains) should be given orally or rectally, followed by 0.2 to 0.5 Gm. (3 to 7.5 grains) every four hours. One year old infants require a daily total (divided into four to six doses) of 1 Gm. (15 grains); 2 year old children 2 Gm. (30 grains), and 3 year and older children 3 Gm. (45 grains), in addition to an initial dose of these same amounts. If the

"Common cold", coryza, rhinitis, rhinopharyngitis, tonsillitis, laryngitis or croup, tracheitis, and influenza: As may be seen in figure 1, capsules of codeine and papaverine (each 16 mg., or $\frac{1}{4}$ grain) three times a day after meals for the first two days after onset reduce the length and complications of a "cold"⁽⁸⁾. Sulfonamide therapy⁽⁷⁾ will prevent secondary infections⁽⁹⁾. The constipation caused by codeine may require treatment. Bedrest for forty-eight hours, large amounts of fluid, nose and throat sprays of 0.25 per cent aqueous neosynephrin or 1 per cent aqueous racephedrine (the nasal secretion first being removed with a soft rubber ear syringe), Penetro or Benzadrine inhalers (not after 4 p.m.), gargles of 0.6 Gm. (10 grains) of acetylsalicylic acid or $\frac{1}{5}$ teaspoonful each of table salt, baking soda and borax in a glass of warm water, and hexylresorcinol and other throat lozenges are helpful. Sedatives also are useful, either alone, or added to cough mixtures, if the cough causes vomiting or loss of sleep. Sedatives, however, should be used *only* if

the cough is irritating, painful and non-productive; both sedatives and cough mixtures are contraindicated if the cough is loose and productive, as lung abscess or bronchiectasis occasionally may be caused by the accumulation of "uncoughed-up" secretion. An ice pack or collar to the throat sometimes relieves a severe sore throat or hacking cough. Cough due to a swollen or elongated uvula is helped by honey or saturated sugar solution; the osmosis reduces the edema. If the cough is very troublesome, a 1 per cent butyn throat spray and a humidifier or steam tent may be used. Other measures are worse than useless, especially nasal irrigation, oil nose drops which may cause lipid pneumonia, argyrol nose drops or packs, and throat painting with silver nitrate or other antiseptics. The diet need not be changed. Cathartics have no influence on colds, except that the patient dare not cough if his bowels are loose.

Otitis media: For the first forty-eight hours, unless the child is extremely ill, a hot water bottle over the ear, a nasal spray of 1 per cent aqueous racephedrine, and two to four drops of atropine (or ephedrine) and chlorobutanol in glycerin⁽¹⁰⁾, or of 5 per cent phenol in glycerin should be instilled in each ear every six to eight hours. Not more than six instillations should be given, and they should never be given after the drum is opened. Oral sulfonamide therapy⁽⁷⁾ shortens the course of the inflammation and reduces the risk of mastoiditis, although it may mask the signs. The drum should *not* be incised unless it is gray and bulging with obliterated landmarks and the patient is very ill, restless and cannot sleep. If the drum is opened, the canal should be irrigated every four to eight hours for the next two to six days with 3 per cent sulfadiazine in 8 per cent triethanolamine, or with one or two ear syringefuls of ear lotion⁽¹¹⁾, and swabbed dry. *Chronic otitis* should be treated by blowing an ear-syringe of 1 per cent iodine-boric powder through the perforated drum

above blood concentrations of the drug are not produced—and often the size of the dose and the blood level are not correlated—this dosage should be increased or decreased to produce these concentrations; higher levels are necessary in severe infections. If the infection is very severe, or oral or rectal administration is impractical, sodium sulfapyridine, sodium sulfathiazole or sodium sulfadiazine may be given intravenously or subcutaneously in daily total amounts of 6 cc. of a 0.5 per cent solution in sterile normal saline (5 mg. per cubic centimeter) per kilogram of body weight (2.5 cc. per pound). These solutions cannot be autoclaved. Similar amounts of 0.8 per cent sterile sulfanilamide (it may be autoclaved) can be given subcutaneously. Adequate fluids should be given, parenterally if necessary. The patient should be kept in bed and away from sunlight, if possible. The urine should be kept alkaline with oral sodium bicarbonate or sodium lactate to prevent precipitation of sulfonamide crystals in the kidney tubules. Saline cathartics and sulfur-containing drugs, which hasten the development of sulfhemoglobinemia, should not be given during sulfanilamide therapy. The patient should be asked about previous reactions to sulfonamides. If the kidney function is poor or the hemoglobin is low, or if the patient is jaundiced or pregnant, sulfonamides should be given cautiously. At present, the cost of sulfathiazole is five times that of sulfanilamide; sulfapyridine and sulfaguanidine are thirteen times as expensive, and sulfadiazine twenty-nine times.

8. Diehl, H. S.: (a) The Treatment of the Common Cold, J. Indust. Hyg., 17:48-65 (March) 1935; (b) Medicinal Treatment of the Common Cold, J. A. M. A. 101:2012-2019 (Dec. 21) 1935.

9. Menefee, E. E., Jr. and Speed, J. A.: Treatment of Infections of the Respiratory Tract with Sulfonamides, North Carolina M. J. 2:611-613 (Nov.) 1941.

- | | | |
|-----|-----------------------------|-----------------------------|
| 10. | Chlorobutanol (chlore- | |
| | tone) | 130 mg. (gr. ii) |
| | Atropine or ephedrine | |
| | sulfate | 130 mg. (gr. ii) |
| | Glycerin | 15 cc. (oz. $\frac{1}{2}$) |
| | Water, q. s. ad. | 30 cc. (oz. i) |
| 11. | Alcohol | 4 cc. (dr. i) |
| | Hydrogen peroxide | 4 cc. (dr. i) |
| | Boric acid (saturated | |
| | solution) | 16 cc. (dr. iv) |
| | Water, q. s. ad. | 30 cc. (oz. i) |

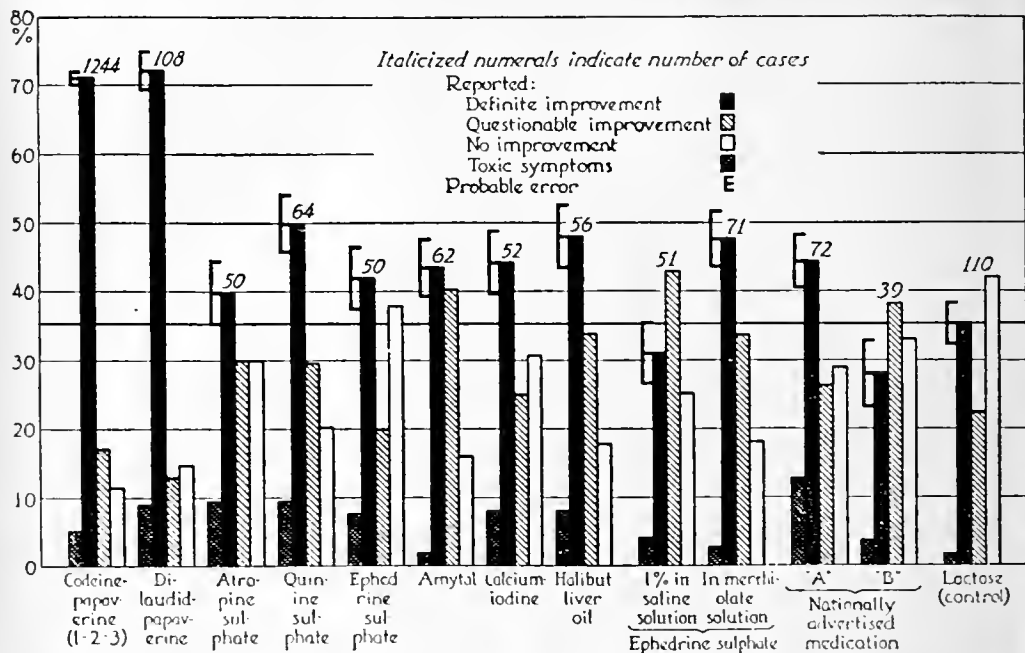


Fig. 1. Comparison of drug therapy in common colds (Courtesy H. S. Diehl, J. Indust. Hyg.TM, Williams and Wilkins Co.)

after it has been cleaned and dried, or by filling the canal with saturated urea solution or an extract of earica papaya, twice daily. Polyps, tonsils and adenoids should also be removed.

Mastoiditis: If the symptoms are definite and the mastoid cells are shown to be cloudy by x-ray, operation with thorough cleaning out of the cells should be done by a competent otolaryngologist. Oral sulfonamide therapy⁽⁷⁾ is helpful.

Sinusitis: Nasal sprays of 0.25 per cent aqueous neosynephrin or 1 per cent aqueous racephedrine, Penetro or Benzadrine inhalers, and oral sulfonamide therapy⁽⁷⁾ usually are sufficient. Relief from pain also may be obtained by dropping or spraying 1 per cent butyn into the nose four or five times at hourly intervals or by the ingestion of 0.3 Gm. (5 grains) of acetylsalicylic acid every four hours for three or four doses. Surgical interference rarely is necessary in children. Adenoids, hypertrophic or deviated turbinates, and other nasal obstructions may cause recurrent sinus infection and require removal while the infection is quiescent. If the sinusitis is due to allergy, the patient

should be desensitized to the offending protein.

Cervical adenitis: Oral sulfonamide therapy⁽⁷⁾ usually is sufficient.

Peritonsillar abscess: Oral sulfonamide therapy⁽⁷⁾ and an ice collar occasionally will allay the inflammation, but if they do not, and the abscess is peritonsillar and fluctuant (an abscess never becomes fluctuant less than four days after onset), an incision should be made above the tonsil, with the patient's head down and without a general anesthetic, using suction to prevent the aspiration of pus. A tonsillectomy should not be done at the same time. If the abscess is retropharyngeal and fluctuant, it should be incised through the pharynx with a sharp fingernail or guarded scalpel, using suction to prevent the aspiration of pus.

Pertussis: Sedatives in small doses, especially at night, if the paroxysms are severe; raising the head of the bed; and the oral administration of 100-500 mg. of ascorbic acid daily are generally efficacious. Coughing usually is reduced while the patient is outdoors, or breathing moist air or steam. Two cubic centimeters of pertussis antigen (detoxified) every three days may shorten the course of the disease. Sulfonamide therapy⁽⁷⁾ and oxygen are essential for

pneumonia. Three or four 20 cc. intramuscular doses, given every other day, of human "hyperimmune" pertussis serum (obtainable from the Philadelphia Serum Exchange, 1740 Bainbridge Street, Philadelphia, are life-saving in severe infections, especially if given early. An immune rabbit serum also is being used.

Bronchitis: Elixir of terpin hydrate or syrup of wild cherry with codeine should be added to the treatment for rhinopharyngitis discussed above.

Pneumonia: Sulfonamide therapy⁽⁷⁾, small transfusions, an oxygen box^(12, 13), and serum (if sulfonamide therapy fails) are the therapeutic measures available for pneumonia. Postural drainage and bronchoscopy may be necessary in chronic pneumonia.

12. Burgess, A. M., Briggs, A. S., and Burgess, A. M., Jr.: Oxygen by the Open Box Method, *New England J. Med.* 210:231-239 (Feb. 1) 1934.

13. A 35 to 65 per cent oxygen concentration can be maintained at the level of the patient's nose in a Burgess oxygen box⁽¹²⁾. The oxygen content can be raised to 95-98 per cent by covering the open top of this box with rubber sheeting or preferably Pliofilm no. 20 (Goodyear Rubber Co.) and hanging in the box a wire-mesh basket 12 x 2 x 2 inches, containing soda lime (which should be renewed every twenty hours) to remove carbon dioxide. If the box is open, soda lime is unnecessary, as the concentration of carbon dioxide is only 1 per cent with oxygen flowing at 2 liters per minute. The Burgess oxygen box is 20 x 20 x 18 inches; the sides and back are made of wood, and the bottom and front of the box are covered with Pliofilm no. 20 or canvas, tacked in place or fastened with thumb screws. This canvas should be removed and washed after each patient has used it. In the lower part of this front curtain is a 12 inch slit, closable with a "zipper", for admitting the head, thorax and arms of an infant, or the head of an older child. In use, the canvas floor is covered with a thin pillow. The wooden sides of the box contain windows of cleaned, non-inflammable, old x-ray films. A flattened metal gallon bucket is hung inside the box on a hook at the back. The space between the bottom of the bucket and the floor of the box should be 6 inches. This bucket should be kept filled with cracked ice and drained by rubber tubing leading from a metal tube soldered in the bottom of the bucket through the back of the box to a collecting pail on the floor. The condensed moisture on the outside of the ice bucket will not drip if a large rubber sponge is fastened with adhesive tape to the bottom of the bucket. A 10 x 10 inch piece of canvas or oilcloth, which acts as a baffle plate, is fastened vertically across the box flush with the top and parallel to and 5 inches in front of the back, separating the space for the patient's head from that occupied by the ice bucket. A 10 x 5 inch board is hinged at the top of the back to serve as a non-conducting cover to the ice cooler. An oxygen tank which delivers 2 to 3 liters a minute is connected to tubes which pierce one side of the box

Empyema: Drainage and Hart's tidal irrigation⁽¹⁴⁾ should be employed in conjunction with sulfonamide therapy⁽⁷⁾.

Tuberculosis: Pneumothorax and sanatorium care may be necessary.

Pleurisy: Paracentesis, sedatives, and diathermy may be employed in the treatment of pleurisy. In some cases sanatorium care may be necessary.

Foreign body: Bronchoscopy, plus sulfarsphenamine or sulfonamide therapy, is advisable.

Lung abscess and bronchiectasis: Sulfarsphenamine, sulfonamide therapy⁽⁷⁾, postural and bronchoscopic drainage, potassium iodide, and lobectomy are the therapeutic measures available for these conditions.

Atelectasis and lung collapse: For newborn infants, the administration of 5 per cent carbon dioxide in oxygen, continuously or every half-hour, and gentle slapping every four hours to cause the infant to cry for ten minutes will usually expand the lungs. For older children, in addition to complete bedrest, similar carbon dioxide and oxygen therapy may be necessary. Any obstruction causing lung collapse should be removed bronchoscopically if possible. Postural drainage, expectorants, epinephrine, artificial pneumothorax, and desensitization may be necessary.

Pneumothorax: Bedrest is the only treatment.

Psittacosis and pleurodynia: Most of the patients recover without special therapy, other than sedatives. Convalescent immune serum shortens the course in psittacosis.

Fungus infections: If a skin test with the infecting fungus is positive, the patient should be desensitized, and then given a daily inhalation of 1 to 4 cc. (¼ to 1 drachm) of ethyl iodide by an inhaler, which can be

14. Hart, Deryl: Empyema in Children: Report of Thirty-Six Cases Treated by Tidal Irrigation and Suction, *South. M. J.* 23:823-829 (Sept.) 1930.

3 inches from the bottom and 3 inches from the back. If it is necessary to elevate the patient's head, this box can be attached by metal clamps to the back of the bed. If desired, a larger box, closed on all four sides, can be used to contain an entire infant. The percentage of oxygen should be determined every four hours by means of an oxygen analyzer, which can be purchased or made. These boxes may be built locally or purchased from Technoequipment Company, 199 Chapman Street, Canton, Massachusetts; Corp Brothers, 40 Mathewson Street, Providence, Rhode Island; or Warren E. Collins, 555 Huntington Avenue, Boston, Massachusetts,

purchased from Warren E. Collins Company, Boston. A saturated (100 per cent) solution of potassium iodide also may be administered by mouth, starting with 0.1 cc. (1½ minims) three times a day, and increasing gradually to a daily total of 2 to 8 cc. (1½ to 2 drachms), diluted with water. Oral and local sulfonamide therapy⁽⁷⁾ is beneficial.

Hay fever and asthma: The acute symptoms may be relieved by the subcutaneous administration of 0.1 to 0.2 cc. (1 to 3 minims) of 1:1000 epinephrine every fifteen minutes for four doses, or by inhalations of 1:100 epinephrine in saline. The following preparations also relieve symptoms: 25 mg. (3/8 grains) of propadrine hydrochloride every three hours; aminophylline, ephedrine or amytal capsules⁽¹⁵⁾; 1 to 3 teaspoonfuls of 10 per cent potassium chloride or potassium citrate three times a day with or after food, or 0.3 to 1 Gm. (5 to 15 grains) of calcium phosphate (dibasic), calcium lactate, or calcium gluconate three times daily, or 0.3 to 0.6 Gm. (5 to 10 grains) of potassium chloride dissolved in a glass of water or milk three times a day. The maximal daily dose of the last preparation is 3 Gm. (45 grains), and it should be discontinued if nausea, diarrhea, epigastric pain, urinary frequency, or aggravation of asthma occurs. Helpful adjuncts to treatment are percomorph, cod or halibut liver oil, viosterol, ascorbic acid, orange or tomato juice, oxygen and helium therapy, air-conditioned rooms, a pollen-free climate, "slow epinephrine" (though it may cause reactions), nasal sprays of 0.25 per cent aqueous neo-synephrin or 1 per cent aqueous ephedrine, a benzedrine inhaler (not oftener than every hour, and not after 4 p.m.). For permanent cure, the causative proteins must be discovered by history or skin tests, and the patient must avoid them or be desensitized to them. Sinusitis and other sources of infection, and psychic factors should be sought and corrected. Tonsillectomy improves 50 per cent of asthmatic patients, but makes a few worse. Oral desensitizing preparations have not proved successful and may be dangerous. The pillows of children who are sensitive to feathers may be painted with liquid rubber, or covered with rubber pillow cases (obtainable from the Allergia Company, Newton, Mass.).

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|-----|-----------------------|------------------|
| 15. | Aminophylline . . . | 50 mg. (gr. 3/4) |
| | Phenobarbital . . . | 8 mg. (gr. 1/8) |
| | Ephedrine sulfate . . | 8 mg. (gr. 1/8) |

A COMPARATIVE STUDY OF PREGNANCY IN THE WHITE AND COLORED RACES

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CHARLOTTE

The notoriously high maternal death rate in the South has been ascribed primarily to social and economic causes. A major factor is thought to be the large percentage of the child bearing populace among the colored race. The maternal mortality rate among Negroes throughout the country has always been higher than among the white population and has failed to show the substantial reduction that has been obtained in the mortality among white women during the past few years. In the United States the maternal mortality rate for Negroes in 1938 was 8.6 per 1000 births as compared with 9.3 in 1934—a reduction of 8 per cent. The mortality rate for white mothers in 1938 was 3.8 per 1000 births as compared with 5.4 in 1934—a reduction of 30 per cent. The maternal mortality rate among Negroes throughout the entire United States in 1938 was more than double the white mortality rate. North Carolina's statistics were comparable to those for the United States as a whole in this respect, the total maternal death rate in 1938 being 5.6 per 1000 live births: 4.4 for white women, 8.3 for Negroes.

This comparative study of 1000 consecutive pregnancies in indigent white women and 1000 in colored women, all residing in Mecklenburg County, was undertaken in an effort to ascertain if the colored patient is a greater obstetrical risk than the white patient living under similar social and economic circumstances. Private white patients naturally do not give fair comparative data. The 1000 white women herein reported were all indigent patients living in the poorer sections of the city or on tenant farms, and their dietary, economic and environmental circumstances are comparable to those of the Negro patients. Such studies as this, undertaken on a wide scale, might aid in answering some of the problems of the high mater-

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nal mortality in the Southern states. Is the rate in the South high because of the large proportion of Negroes, or is it high because of the social and economic conditions in which the Negro lives and breeds? In short, is race *per se* really a factor in maternal mortality?

CHART 1
Comparative Maternal Mortality by Race
North Carolina Bureau of Vital Statistics

	Rate per 1000 live births	
	White	Colored
1930	6.7	12.2
1932	5.8	10.3
1934	6.7	9.7
1936	5.9	9.6
1938	4.5	8.4
1939	4.0	6.7
Total deaths 1930—640		
Total deaths 1939—394		

The Charlotte Maternity Clinic offers a prenatal service for indigent patients in a large central city clinic and five sub-clinics in rural sections of the county. This means that prenatal care is readily accessible to every resident of the city and county. In the early years of this program it was thought that the Negroes would be too indifferent and ignorant to avail themselves of this service. Such has not been the case; rather the white patient has proven to be less responsive and more immune to maternal welfare education than the Negro. One hundred and eight white patients in this series had no prenatal care, whereas there were only 21 Negroes who received none. Six hundred and eighty-nine Negroes had excellent prenatal care, as compared to 562 white patients. The illiterate white class is in certain respects a greater social problem than the Negro. Apparently they are less interested in receiving competent obstetrical care.

CHART 2
Prenatal Care

	1000 Colored	1000 White
None	2.1%	10.8%
Inadequate (4 visits or less)	29.0%	33.0%
Good	68.9%	56.2%

CHART 3

Age Group

	1000 Colored	1000 White
10-19 years	35.2%	20.5%
20-29 years	50 %	51.0%
30-39 years	14 %	25.0%
40 plus years	0.8%	4.5%

This analysis conforms with the accepted knowledge as to the early reproductive activity of the Negro and her declining fertility in the fourth and fifth decades of life.

CHART 4
Gravidity

	1000 Colored	1000 White
Primiparas	30%	22%
Multiparas	70%	78%

CHART 5

Hemorrhage

	1000 Colored	1000 White
Postpartum	21	23
Placenta praevia	5	3
Premature separation of the placenta	5	6
Total percentage	3.1%	3.2%

No racial difference is noted in the incidence of hemorrhage complicating pregnancy.

CHART 6

Labor

	1000 Colored	1000 White
Precipitate delivery	27.9%	14.2%
Labor over 24 hours	6.4%	6.6%
Labor over 48 hours	1.1%	1.5%

Aside from a higher incidence of precipitate delivery in the Negro (naturally high in any home delivery service) there is no striking racial difference in the duration of labor. The incidence of prolonged labor is quite similar in the two groups.

CHART 7
Operative incidence

	1000 Colored	1000 White
Low forceps	1.2%	3.7%
Mid forceps	0.4%	0.7%
Version	0.4%	0.1%
Breech extraction	0.2%	0.6%
Curettage	0	0.2%
Hysterotomy	0.6%	0.3%
Cesarean section	0.9%	1.0%
Total	3.7%	6.6%

The higher operative incidence in the white race is due chiefly to a greater use of low forceps in these patients (37 cases in the white patients as compared to 12 in the Negroes). Elimination of this factor leaves a similar incidence of major obstetrical procedures in the two races. Even the incidence of cesarean section shows no racial difference; there were 9 cases in the white group and 10 cases in the colored.

From the study of the duration of labor and the operative incidence it would seem that no pelvic racial variation occurs that is not well compensated by other factors. While contracted pelvis is generally accepted to be more frequent in the colored race, nature apparently terminates pregnancy as effectively as in the white patient.

CHART 8		
Toxemia of Pregnancy		
	1000 Colored	1000 White
Pre-eclampsia . . .	11.4%*	6.9%†
Eclampsia . . .	1.5%*	0.5%*
Hypertensive vascular disease . .	5.8%*	7.9%*
Total	18.7%	15.3%

* One maternal death.
† Two maternal deaths.

The incidence of eclamptogenic toxemia of pregnancy was found to be higher in the Negroes than in the white patients studied. This is the most positive finding in this study and this condition probably contributes to the higher Negro maternal mortality reported in vital statistics.

CHART 9		
Induction of Labor		
	1000 Colored	1000 White
Rupture of membranes . . .	1.7%	2.8%
Bougie . . .	0.1%	0.1%

CHART 10		
Complications		
	1000 Colored	1000 White
Organic heart disease . . .	0.6%	0.6%
Tuberculosis . . .	0.5%	0.3%
Fetal abnormalities . .	0.5%	1.4%
Syphilis . . .	23.7%	5.9%
Puerperal infection . .	0.8%	1.9%

The high incidence of syphilis in the colored patients (237 cases in this series of 1000 deliveries), while probably not a factor in maternal mortality, requires comment as a contributing cause of maternal morbidity and fetal mortality. The higher incidence of fetal abnormalities in the white patients conforms with the published observations of Douglas Murphy on this subject. No other striking differences in the incidence of medical complications were noted.

An apparently higher incidence of infection in the white patients is not worthy of evaluation, for the delivery of the majority of these patients in the home did not permit an accurate study of morbidity.

CHART 11		
Infant Mortality		
	1000 Colored	1000 White
Miscarriages . . .	2.4%	3.4%
Stillbirths . . .	4.0%	3.3%
Neonatal deaths . .	4.2%	3.0%
Total infant mortality . . .	10.6%	9.7%

No striking racial difference appears in the incidence of stillbirths. The incidence of miscarriages is similar. The higher incidence of neonatal deaths in the colored pa-

tients is probably related to the higher incidence of syphilis in this group.

CHART 12		
Maternal Mortality		
	White	Colored
Toxemia of pregnancy . . .	2	4
Pneumonia	0	1
Postpartum hemorrhage . . .	1	1
Ruptured uterus . . .	1	0
Spinal anesthesia . . .	1	0
Total	5	6

Case Notes of White Maternal Deaths

Case 1. This patient had hypertensive cardiovascular disease, and was first seen at the twenty-eighth week of gestation. Porro cesarean section was performed following premature separation of the placenta (Couvelaire uterus). Death occurred eleven days postoperatively.

Case 2. This patient had pre-eclamptic toxemia with acute cardiac decompensation. She received no prenatal care.

Case 3. This death was from eclampsia. The patient was first seen in labor with disproportion; forceps were unsuccessful; the patient died in shock.

Case 4. This patient had pre-eclampsia and disproportion. A low flap cesarean section was performed. Death resulted from infection. This case received adequate prenatal care.

Case 5. This was a case of bronchopneumonia and pneumococcal peritonitis. The patient received adequate care.

Case 6. This patient had mild pre-eclampsia, anemia, and an acute respiratory infection. Death was due to postpartum hemorrhage and shock.

Toxemia of pregnancy was a major factor in five out of the six maternal deaths.

Case Notes of Colored Maternal Deaths

Case 1. Death in this case was due to postpartum hemorrhage. The infant was born without a physician and the placenta was pulled out by the mother.

Case 2. This patient had a ruptured uterus. High forceps and a craniotomy were necessary to deliver a 12 pound infant.

Case 3. In this case death was due to eclampsia. One prenatal visit was made three months before delivery.

Case 4. This was the death which was due to spinal anesthesia. This case was complicated by cephalo-pelvic disproportion, pre-eclampsia, upper respiratory infection, and obesity.

Case 5. This patient had chronic hypertensive cardiovascular disease. The first visit was made when the patient was seven months pregnant. Her blood pressure was found to be 200 systolic, 140 diastolic. She was immediately admitted to the hospital, and death resulted from a sudden vascular accident at 6 a. m. the following day.

Toxemia of pregnancy was a major factor in three of the five colored maternal deaths.

From the standpoint of assignment of primary responsibility the maternal deaths occurring in this series of 2000 indigent patients may be divided into three arbitrary groups: those due to the patient, those due to the physician, and those non preventable.

CHART 13

Assignment of Major Responsibility for Maternal Deaths

	Colored	White
Unavoidable	0	2
Physician	2	2
Patient	3	2

Even in a fairly concentrated area of population where adequate maternal care and hospital facilities are provided the indigent patient frequently does not utilize such services. Often the patient's failure to cooperate intelligently results directly in a maternal death.

The very nature of a free clinic service results in limitation of professional interest and a lower professional standard than that represented in the relationship of qualified private physicians to paying patients. In addition to inadequate medical supervision the problem of a changing and inexperienced medical personnel—the inevitable price of a teaching service—is indisputably a factor in maternal mortality.

In the group of unpreventable maternal deaths the irreducible minimum has yet to be defined. The very nature of pregnancy, however, entails hazards that are occasionally fatal.

Conclusions

1. The incidence of toxemia of pregnancy and of syphilis is higher in the colored than in the white race.
2. No striking racial differences were noted in the incidence of hemorrhage, infection, operative deliveries, or other contributory causes of infant and maternal mortality.
3. Toxemia and chronic vascular pathology together constitute the outstand-

ing factor in maternal mortality in the indigent, being a major contributing cause in eight of the eleven maternal deaths in this series of 2000 patients.

4. The Negro patient is often more appreciative, cooperative and receptive to an organized maternal welfare program than the indigent Southern white patient.
5. The high maternal mortality throughout the South is not primarily due to the large proportion of the colored race in the population, but to the social and economic circumstances confronting a large percentage of the populace, including the Negroes. Race *per se* is not a major contributing factor in maternal mortality.

Abstract of Discussion

Dr. Oren Moore (Charlotte): That paper is one of the most illuminating I have heard for a long time. We have for a great many generations used the large colored population as an alibi for the higher maternal death rate in the South. If the authors of this paper have done nothing else, they have taken away from us that alibi. This paper shows that the hazards of child bearing in the colored population are not a racial problem. This statistical study gives us other reasons for our high maternal death rate.

Four deaths out of 2000 cases are attributed to the physician. That factor ought to be one that we could eliminate. Doctors will continue to be human and fallible, and to lose some patients by errors in judgment. However, there ought not to be four deaths due to doctors in 2000 cases.

The incidence of toxemia is certainly too high, even in a clinic of this kind.

There was no death attributable to syphilis. It is amazing to see how many syphilitics are delivered in that clinic and what a small percentage of fetal mortality results from syphilis, although the patients get only an average of four or five doses of salvarsan during the prenatal period. There are very few difficult deliveries that can be attributed to syphilis.

A certain number of these patients are repeaters. Some of those who died with toxemia had probably been in the clinic with previous pregnancies and had been classified as toxemic. There is a point for birth control and sterilization. The paper is full of thought provoking material, and I am glad to have had this opportunity to discuss it.

Dr. A. L. deCamp (Fayetteville): My experience has borne out Dr. Bradford's conclusions that colored patients, on the whole, are far more receptive to prenatal care than are white patients. We have a small maternal clinic for colored women in Cumberland County which has gradually grown until we have to work long past hours to get through. At the white clinic, which is conducted on the same premises, we have a hard time getting enough patients to come to make it worth while to keep it open. The ratio of the white to the colored population in our county is about 6:4. We have that same type of white indigent patient who is very uncooperative and very indifferent to suggestions that are made about the management of pregnancy.

TREATMENT OF FLATULENCE WITH PROSTIGMIN BROMIDE

R. HENRY TEMPLE, M. D.

KINSTON

Even the layman is familiar with the symptoms of indigestion, and he has many labels for his discomfort: biliousness, heart burn, dyspepsia, sour stomach, gas attacks, and bloated feeling. Most often there is a disagreeable sensation in the epigastrium, often temporarily related to the taking of food and described as a burning, pressing, or full feeling. Usually the patient has difficulty in describing the sensation, as the symptoms change in their duration, intensity, and location from time to time. Sometimes it seems to flow upward over the front of the chest with burning or squeezing sensations in the throat. Oftentimes fullness and pressure cause pain around the left chest, with cardiac palpitation. Flatulence in one form or another is an almost universal complaint, and it is important that the physician be aware of this fact in order that he may properly evaluate the patient's story.

The causes of flatulence may be grouped as follows:

(1) Lesions in the stomach itself: carcinoma, achylia, peptic ulcer with hyperacidity and pylorospasm, gastritis, tumors of the stomach, phytobezoars, syphilis, deformities, and anomalies.

(2) Organic abdominal disease outside of the stomach, such as gallbladder disease, cardiac decompensation, chronic appendicitis, and coronary disease.

(3) Abnormal reflexes in the absence of any organic lesions, causing what is commonly known as nervous indigestion. The patient is usually the high strung type, and the actual symptoms are almost always directly related to worry, stress and strain, or to poor habits in eating, rest, and play⁽¹⁾.

It should always be the aim of the physician to approach the diagnosis of every case in which there is a complaint of flatulence by the purely eliminative process; for although it is undeniably true that the majority of digestive complaints are due to sensory, secretory, or motor disturbances and are therefore functional rather than

organic in origin, yet the organic lesions which may cause digestive disturbances are so serious that it is absolutely essential that they be ruled out before a diagnosis of a purely functional dyspepsia is accepted⁽²⁾.

Gas is normally found in the gastro-intestinal tract in small amounts. When the amount becomes excessive it produces a bloated feeling or sense of fullness, with the desire to expel gas orally or per rectum. This symptom of flatulence is probably the most common complaint that a physician encounters in taking a history; oftentimes it is the chief or sole complaint of the patient.

The physiology of the gaseous contents of the stomach and intestines takes one into a very intriguing field. Most gas that occurs in the stomach is swallowed and consists chiefly of atmospheric nitrogen, of which practically none is absorbed either in the stomach or in the intestines. The remaining gaseous substance in the stomach is oxygen, which is partially absorbed along the gastro-intestinal tract. The hydrochloric acid content of the stomach prevents fermentation and the formation of additional gas in the stomach. Usually the greatest amount of gases are formed in the cecum and ascending colon, including the hepatic flexure. This fact is partially explained by the large quantity of liquids associated with stasis, and the increased bacterial flora coming into contact with the intestinal contents. The gases found in the intestines are carbon dioxide (which is mostly absorbed by the blood and expired through the lungs, except in certain pathological conditions), methane, hydrogen, indole, skatole, ammonia, and hydrogen sulfide. The nitrogen traverses the entire intestinal tract and is expelled as flatus with other gases⁽³⁾.

Flatulence *per se* may be due to excessive intake, as in aerophagia—a condition which is difficult to explain to patients; many are convinced only after fluoroscopic demonstration. Excessive formation of gas accounts for many cases and results from incomplete decomposition due to an abnormal intestinal flora or a diet excessive in protein, carbohydrates, or cellulose. Oftentimes the incomplete digestion of starches, owing to insufficient cooking or poor mastication, may cause excessive gas. Some cases are due to deficient expulsion of gas as the result of constipation, redundancy of the colon, ob-

Read before the Regional Meeting of the American College of Physicians, Chapel Hill, October 31, 1941.

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2. Beckman, Harry: Treatment in General Practice, ed. 2, Philadelphia, W. B. Saunders, 1934, p. 463.

3. Boles, Russell S.: Personal communication.

struction from a spastic sphincter ani, or a voluntary restraint of gas in the bowel (which is not at all an uncommon cause of flatulence).

The deficient absorption of gas from the intestinal tract due to a circulatory disturbance in the bowel and stomach (for example, a failing heart, hypertensive cardio-renal disease, coronary artery disease, nephritis, cirrhosis of the liver, hepatitis, and cancer of the stomach), or to an impairment of the absorptive powers of the mucosa in gastroenteritis or colitis may be the factor responsible for excessive gas⁽⁴⁾.

Intestinal atony is a common cause of flatulence, and it may be neurogenic or toxic in origin. Common examples of this condition are found in cases of hysteria, neurasthenia, typhoid fever, and pneumonia, all of which may retard gas absorption and promote increased formation⁽⁵⁾.

Anemia may be a much more important factor than it is supposed to be. It was present in a majority of the cases reported in this paper. The theory is that the gas carrying properties of the blood (chiefly the hemoglobin and mature erythrocytes) are deficient, and the transportation of gas from the intestines to the lungs is impeded. Respiratory diseases such as lobar pneumonia, asthma, and pulmonary emphysema may increase the intestinal gas because of the difficulty in ridding the blood of waste gas by respiration⁽⁶⁾.

Treatment

The treatment of flatulence should, of course, be directed to the underlying cause. Extreme degrees of tympanites associated with colic require immediate palliative treatment. In such cases reported in this paper in which adhesions were causing a partial intestinal obstruction⁽⁷⁾, the usual treatment of the underlying pathology was instigated, with varying results; then prostigmin bromide tablets were used after a period of three or four weeks.

As flatulence often has a neurogenic basis, the following treatment of symptoms was followed in cases of persistent flatulence in which intestinal studies along with x-rays revealed no organic lesion.

- (1) Sedation (This is of paramount importance.)
- (2) Psychotherapy
- (3) Rest
- (4) Hot fomentations
- (5) Belladonna, benzedrine, calcium gluconate
- (6) Carminatives: spirits of peppermint, Hoffmann's anodyne
- (7) Correction of aerophagia, if present
- (8) Correction of constipation
- (9) Diet and vitamin B complex⁽⁸⁾
- (10) Exercise

After three or four weeks, whether the results were good or poor, the patients were put on prostigmin bromide, 15 mg. four times a day. This was given in all cases, regardless of the pathology.

Chemistry and Pharmacology

Prostigmin bromide is the dimethyl-carbamate ester of m-oxyphenyltrimethyl ammonium bromide.

In general, it may be said that the pharmacological action of prostigmin is similar to that of physostigmine (eserine), with the important distinction that the prostigmin is practically free of the disturbing effects which attend the use of physostigmine. Prostigmin inhibits the destruction of acetylcholine at the myoneural junction by combining the urethane groups of the prostigmin molecule with the "esterase", thereby retarding its destructive action on acetylcholine and hastening the stimuli from the motor nerves to the voluntary muscles⁽⁹⁾.

However, the most important property of the drug in the treatment and prevention of gas in the intestinal tract is its activity as a vagotonic agent. It causes a marked increase in peristalsis and stimulates an atonic intestinal tract. All the muscular activities of the small intestines are stimulated by prostigmin. Symptoms of overdosage are muscular twitchings, weakness, vertigo, intestinal hyperperistalsis, and repeated bowel movements. Atropine or belladonna are the best antagonists to prostigmin⁽¹⁰⁾.

Prostigmin has a mild miotic effect, and causes a very slight change in blood pressure⁽¹¹⁾. It restores the tonicity of the

4. The Cyclopedia of Medicine, Surgery, and Specialties, Philadelphia, F. A. Davis, 1939, vol. 6, p. 326.
 5. Kantor, J. L., and Marks, J. A.: Study of Intestinal Flatulence, Ann. Int. Med. 3:403 (November) 1929.
 6. Alvarez, W. C.: The Mechanics of the Digestive Tract, ed. 2, New York, Paul B. Hoeber, 1928, p. 347.
 7. Thewlis, M. W.: Preclinical Medicine, Baltimore, Williams and Wilkins, 1939, p. 74.

8. Haggard and Greenburg: Diet and Physical Efficiency, New Haven, Yale University Press, 1935.
 9. The Cyclopedia of Medicine, Surgery, and Specialties, Philadelphia, F. A. Davis, 1940, vol. 12, p. 632.
 10. Written communication from Hoffman-LaRoche, Inc., Nutley, N. J., September 1, 1941.
 11. Shainle, M. S.: The Treatment of Flatulence, Rev. Gastroenterol. 8:181 (March and April) 1941.

intestines to slightly more than the normal level¹².

Results Obtained With Prostigmin Bromide

In February, 1940, a patient suffering with a nephroma was given 30 mg. of prostigmin bromide at bedtime and 30 mg. in the morning preparatory to intravenous urography¹³. The radiographs were excellent, with very few gas shadows. During the examination the patient inquired about the tablets and remarked that she had expelled much gas and felt greatly relieved. Flatulence had been a prominent symptom in her case. The patient was given 15 mg. of prostigmin after each meal until her death in August of the same year. I felt that this unfortunate patient had been given great relief from her abdominal symptoms by the use of prostigmin orally and decided to use it symptomatically in the treatment of all patients complaining of flatulence, regardless of the cause.

The appearance of distention due to toxic conditions such as typhoid fever and pneumonia¹⁴, or to abdominal or pelvic adhesions causing a partial obstruction is a warning that the normal tonicity of the intestinal mucosa has been lost. When the motility of the gastric and intestinal mucosa has been impaired, the resulting atony is often followed by markedly increased secretion from the walls of the stomach and intestines. As absorption from the gut decreases, the bowels become filled with large quantities of toxic fluid. As a result of the increased pressure, the blood vessels within the intestinal wall are compressed. This causes a complete cessation of peristalsis and results in acute gastric dilatation and paralytic ileus¹⁵. I feel that, in 2 of the cases reported in which there was partial obstruction, the prostigmin accounted for the unusually smooth postoperative convalescence¹⁶.

I have treated 29 cases of functional flatulence with prostigmin bromide. The ages range from 20 to 57 years. Many of these patients had minor disorders that were corrected as part of the treatment. After they had been under a general routine of treatment for three weeks or more, an attempt was made to evaluate their improvement. All felt that they had improved to some extent. However, every patient still suffered from flatulence either continuously or at intervals. Each of these patients was then given prostigmin bromide tablets, 15 mg. each, three to four times daily. In every instance great relief was afforded. Patients who suffered from gas only at intervals were given medication only during the attacks.

Eighteen cases of gastric anacidity have been treated by this method. In 2 cases syphilis was the etiologic factor, and in one case bronchogenic carcinoma was responsible for the anacidity. All of the patients were given glutamic acid and vitamin B₁, with most gratifying results, except in one case. However, virtually every patient stated that he was still extremely bloated and very uncomfortable one or two days during a week. Prostigmin bromide was prescribed, with instructions to use it orally as needed. Every patient seemed greatly helped except the one who failed to notice any benefit from the glutamic acid.

Four cases of partial intestinal obstruction from pelvic and abdominal adhesions have received prostigmin bromide. One of the cases was syphilitic. Each of the 4 patients obtained temporary relief from distention and tympanites with prostigmin medication, used in conjunction with a rectal tube and hot fomentations. In 2 cases operations were performed to relieve the obstruction. One patient with multiple fibroids will be operated on soon.

I have treated 7 cases of gallbladder disease, in 2 of which there was cholelithiasis, by this method. Routine symptomatic treatment was given for cholecystitis with fair results. Prostigmin bromide orally relieved the gas and bloating, but in no instance was helpful in alleviating the pain.

Eight patients with hypertensive cardiovascular disease marked by much gas and bloating were given prostigmin bromide. One of the patients suffered a coronary occlusion and was extremely uncomfortable for three days because of the tremendous quantities of gas that accumulated in his alimentary

12. Klingman, W. O.: The Treatment of Neurogenic Megacolon with Selective Drugs, *J. Pediat.* 13:805 (December) 1938.

13. Marden, P. A. and Williamson, E. G.: Use of Prostigmin Methylsulfate in Prevention of Post-Operative Intestinal Atony and Urinary Retention, *Surg. Gynec. & Obst.* 69:261 (July) 1939.

14. Trautenberg, L. and Oliver, W.: The Use of Prostigmin in Abdominal and Vaginal Operations for Relief of Post-operative Distention and Urinary Retention, 53:284 (August) 1941.

15. Harger, J. R. and Wilkey, J. L.: Management of Post-Operative Distention and Hens, *J. A. M. A.* 110:1165 (April 9) 1938.

16. Lewis, W. R. and Axelman, E. L.: Modern Method for Prevention of Post-Operative Distention, Report of Eighty-Eight Cases, *Am. J. Surg.* 32:308 (May) 1936.

canal. Prostigmin medication in this instance had almost immediate effect. The other 7 patients received some relief from prostigmin, but results varied a great deal.

Summary and Conclusions

Prostigmin bromide in 15 mg. tablets, given orally three or four times a day, relieved the flatulence in 64 patients: 29 with functional flatulence and minor disorders. 17 with gastric anacidity, 4 with abdominal and pelvic adhesions, 7 with gallbladder disease, and 7 with hypertensive cardiorenal disease. Two patients—one having gastric anacidity, anemia, and hypertension with mild cardiorenal disease, and the other with angina pectoris, cirrhosis of the liver, and anacidity—received no benefit. No untoward reactions were encountered in the 66 cases reported.

This series of cases is, of course, insufficient to warrant the indiscriminate use of prostigmin in all cases of flatulence. Some cases reported were not greatly benefited; however, it seems that the results would indicate that the use of prostigmin should not be restricted to cases of purely functional flatulence. The only caution to be strictly observed is that the drug should not be used in cases of complete intestinal obstruction.

Education for Old Age—Education, which is preparation, has not kept pace with these changes in the social order. Educational curriculums are still geared to the day when life expectancy was fifteen or twenty years less than it is today, when it sufficed that education prepare the boy or girl for the competition of adult life. Neither parents nor teachers have taken cognizance of the necessity for preparation for old age. It has been assumed with complacent smugness that the adult would learn how to grow old—gracefully, happily and usefully—without training or aid. Unfortunately, very few learn this spontaneously. The time has come when educators must revise their objectives. The accomplishments of such men as Oliver Wendell Holmes, William H. Welch, Goethe, Edison, Titian and many others in the evening of their lives are mere indicators of the vast storehouse of latent treasure in those so often sneeringly dubbed "old men." Such careers are rarely fortuitous. Continued development is greatly enhanced by cultivation.—Edward J. Stieglitz: *The Potentialities of Preventive Geriatrics*, New England J. Med. 225: 248 (August 14) 1941.

Confidence.—When a patient goes to a physician he usually has confidence that the physician is the best, or at least the best available, person to help him in what is, for the time being, his most important trouble. He relies on him as on a sympathetic adviser and a wise professional counsellor.—Francis W. Peabody: *Doctor and Patient*, New York, The Macmillan Co., 1939.

THE FAMILY PHYSICIAN AND THE OCULIST

W. P. SPEAS, M. D.

WINSTON-SALEM

At the request of our secretary I am bringing you today some observations gleaned from the experience of thirty years of medical practice. The temptation is to reminisce, to talk of those times when we were in general practice doing everything from tracheotomies on the dining room table by a small kerosene lamp to arm presentation deliveries, when help of any kind was out of the question. Those were hard but happy days. As family physician we were looked up to. As one who has fallen from that high estate into the position of one who merely tries to cover one phase of medical practice, I feel that at least I am able to appreciate the position and problems of the family physician.

The so-called "specialist", no matter what his field, should never forget his position with regard to the whole profession. He should remember always that his specialty is only a branch of the parent trunk. He is still bound by the high standards of medical ethics that apply to the general practitioner. His responsibility in this respect is even greater, because he examines and treats patients of the general practitioner in the privacy of his office without the presence of the referring physician. The high regard in which the patient holds his family doctor must be handled as a sacred trust, so that in every case the patient goes back to his physician with his confidence unshaken, whether he has been referred by that physician or has come of his own accord.

Just when a case should be referred by the family doctor to the oculist is a decision often difficult to make. Certainly no hard and fast rule can be made in most types of cases.

Inflammations of the Conjunctiva

Most types of conjunctivitis can be treated by the family physician. The question whether a red eye is simply conjunctivitis is frequently difficult to decide, even for one trained in eye work. If the condition is of only a few days' duration, with no severe

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pain, and with normal pupillary reaction to light, the physician is usually safe in prescribing an antiseptic solution, rest, protection from light, and the usual general measures.

If, however, there is severe pain and a contracted or irregular pupil, one should suspect iritis. Especially is this true if the pain is worse at night. In case the pupil is dilated and does not react to light, and there is severe pain, one should suspect acute glaucoma. It would probably be unwise for the family physician to take the responsibility of treating these rather serious conditions.

Ophthalmia neonatorum, or purulent conjunctivitis in the new born, is still seen occasionally. These cases must be treated energetically, and most physicians do not care to take the responsibility.

Headache

Headache is a symptom often encountered in general practice. Here, too, it is often difficult for the conscientious physician to decide upon the proper course of action. The type of headache, and the occupation, age, and physical condition of the patient are important clues to the diagnosis. Paroxysmal attacks of headache, occurring every few days or weeks without any special relation to close work suggest some constitutional condition such as toxemia, or perhaps a familial predisposition. The headaches that occur early in the morning, especially if the eyes are not subjected to excessive work at night, do not usually come from the eyes. Rather a gastro-intestinal basis or sinus involvement should be suspected. These cases should be studied carefully before being referred to an oculist. If, however, headache comes on during the day's work, especially in students, bookkeepers, and clerical workers, one should be suspicious of eye strain.

Headache rarely occurs as a result of eye strain in people past middle life. After one becomes presbyopic the eyes give up as a bad job seeing keenly, especially in near work. The patient is thus spared the loss of nervous energy which had to be expended in the act of accommodation earlier in life. In older patients, the physician should search for some general cause of headache such as high blood pressure or gastro-intestinal toxemia. In cases of persistent headache, he should not forget the possibility of

increased intracranial pressure. In such cases the oculist may help in making the diagnosis. In children and adults up to the presbyopic age, headache accompanying or following the use of the eyes in close work should always suggest eye strain.

Defective Vision

Every physician should have in his office a chart of the Snellen type with proper illumination for testing the vision of patients. All students and others engaged in close work whose vision is defective should be referred for refraction. In farmers and other patients whose occupation does not make exacting requirements for clear vision, vision as low as 20/40 is not objectionable, provided the patient is comfortable.

Eye Injuries

Injured eyes should be handled with extreme care. All patients with perforating wounds of the eye should be referred to the oculist. Here the danger of a later-developing sympathetic ophthalmia offers a medico-legal problem which might cause the practitioner much anxiety and embarrassment. A contused eye in which the vision is unaffected and the media are clear may be handled safely by the family physician.

Foreign Bodies in the Eye

The family physician should remove all loose or lightly attached foreign bodies, using 2 per cent butyn or 4 per cent cocaine as an anesthetic. It is not wise for the physician to prolong the effort to remove a foreign body from the cornea if it is found adherent. Nor is it wise for him to attempt to remove embedded foreign bodies, because of the danger of ulceration and possible impairment of vision.

Squint

I beg the indulgence of this society in mentioning again a subject which I brought to your attention at a previous meeting some five or six years ago—namely, the condition commonly known as squint or cross-eye. My only reason for giving the matter more than passing notice at this time is the fact that a large percentage of these cases do not get attention until it is too late to obtain more than partial relief.

"Crossed eyes" or "squint" usually becomes manifest in the pre-school age. Per-

haps the child has had some weakening sickness which the parents feel has "settled in his eyes". Or it may be noticeable only when the child is tired or embarrassed, as in the presence of strangers. Often beginning as an occasional condition, the squint usually becomes constant if left alone. The child grows as other children and is happy in his complete absence of self-consciousness. Often some well-meaning friend advises the parents to wait until the child is old enough to go to school before seeking relief. So, perhaps glasses are purchased for him when he is 6 or 7 years of age. If the treatment begins and ends here, the child will continue to squint ninety-nine times in a hundred. The treatment has been started too late and has ended too soon.

As time goes on the child becomes conscious of the fact that his crossed eyes make him conspicuous; he becomes sensitive about his deformity, and often avoids the company of playmates who sometimes taunt him in regard to his eyes. He thus develops an inferiority complex, which, together with his crossed eyes, is a handicap throughout life.

When we see a case of squint, we should think not only of the deviation of the eye from parallelism, but also of three less obvious, but none the less important conditions: (1) A defective fusion faculty, (2) poor vision in the eye that is out of line, and (3) some form of eye strain.

Fusion: By fusion is meant that faculty of the brain which causes the images in both eyes to merge into one. The normal individual looks with both eyes at an object. An image of that object is produced on the retina of each eye, so that there are two images of the same object. These are conveyed along the optic nerves to the brain and fused into one. For this to be accomplished by the brain, however, it is imperative that the eyes be perfectly straight. In the average individual this desire for binocular vision, this sense of fusion, is so strong that it holds the eyes in line even though they may have a tendency to converge or otherwise get out of line. If this fusion faculty is weak in a child, there is little to hold the eyes in line, and he becomes cross-eyed. The most unfortunate aspect of the situation is the early age at which this sense must be developed if it is to be developed at all. In the normal child it is fairly well developed by the time he is 1 year old, and it can be developed after the age of 6 or 7 only

in rare instances. In a small percentage of children the fusion faculty is entirely absent and no amount of effort can develop it. These children with complete absence of fusion usually see equally well with each eye, crossing first one eye and then the other.

Poor Vision in One Eye: In the examination of a child, one of whose eyes has been crossed for a short while, it will usually be found that the vision of the squinting eye is defective. If the cross-eyed child were to see clearly with both eyes, all objects looked at would appear double. Nature abhors a double image, so she suppresses the image in the deviating eye. The younger the child, the more rapidly and completely does the eye lose the ability to see. A child a year old or younger may lose almost completely the power of fixation within two or three months. In children somewhat older the process is slower, but no less certain to destroy the ocular function if unimpeded.

Eye Strain: In addition to poor fusion and defective vision in the squinting eye, most cross-eyed children have a high refractive error, such as farsightedness. It is imperative that this be corrected at the earliest possible date. In cases of occasional squint it often happens that properly fitted lenses alone will correct the condition.

I have discussed this subject in detail in an effort to impress on the family physician the importance of referring these cases to an oculist. The family physician should make it a rule to refer them as soon as they are discovered, and there should be no exceptions to the rule. The responsibility will then be with the oculist. He will advise the parents as to the proper course of action in each individual case.

Conclusion

The family physician and the oculist should work at all times in closest harmony. In all our efforts we have a common end in view—namely, the interest and well being of the patient.

Gerontology—Gerontology is no longer merely academically interesting, but has become an urgent matter in the minds of those sufficiently far-sighted to see the handwriting on the wall. The nation is aging rapidly. The virile, violent but short-lived days of physical pioneering are largely past. The future holds promise of profound change. A period of intellectual conquest may be dawning. Man at last lives long enough to have time to think.—Edward J. Stieglitz: *The Potentialities of Preventive Geriatrics*, New England J. Med. 225:248 (August 14) 1941.

ENLARGED PARIETAL FORAMINA

KENNETH B. GEDDIE, M. D.

HIGH POINT

The condition of enlarged parietal foramina has been known to exist at least since Lancisi described it in 1707. Lobstein in 1772 again briefly described a skull specimen demonstrating this anomaly. Turner in 1865 gave the first succinct description of this condition: "At the commencement of the posterior slope of each parietal bone, an oval opening, possessing a rounded margin, was situated, the inner end of each of which was about half an inch from the middle line. The long axis of each opening was transverse, that on the right side measured $8/10$ th of an inch, that on the left $6/10$ th, the antero-posterior diameter of the right was at its widest $6/10$ th, while that of the left was only $4/10$ ths of an inch." In anatomical specimens studied this anomaly has been found in prehistoric races, in Egyptian mummies, and in various aboriginal races as well as in civilized man. The hereditary phenomenon which I am discussing today is something entirely different from the millimeter-sized parietal openings which occur not infrequently in normal adults. Pendergrass and Pepper recently described the normal development of skull ossification as follows⁽¹⁾: "The normal ossification of the parietal bone commences in a single center at the end of the second fetal month. As the bones of the skull develop, there are six places where well-defined fontanelles exist. These are situated at the four angles of the parietal bones, two in the median line and two laterally on each side. In addition, there is present during fetal life in each parietal an interval between the radiating lines of newly formed bone along which ossification of the parietal progresses. This space is named the sagittal fontanelle. As the development of the parietal advances the sagittal fontanelle is encroached upon until, as a rule, about the seventh month of fetal life the fontanelle as such has disappeared and only the two minute parietal foramina remain open. Even in skulls which become wholly normal this process may be delayed

and the sagittal fontanelle remain open until birth." The hereditary anomaly which we are discussing is due to an even greater delay in the process and to incomplete ossification of this region of the parietal bones.

The first case to be diagnosed during life was reported by Greig in 1892. The patient, one Robert Ross, aged 35, a driver in the Royal Field Artillery on duty in India, came under the observation of Dr. Greig in 1889 when he was referred to him for examination because he used the presence of two "soft spots in his head" as an excuse for some slight dereliction of duty. He later told Greig that these were congenital in origin and admitted that they gave him no trouble whatsoever. These openings Greig described as "a symmetrical deficiency at the posterior-superior angle of each parietal bone, the two openings being separated by a median bridge presumably corresponding to the Sagittal Suture." In 1917 Greig reported another case⁽²⁾, with an x-ray picture of the condition. This patient was the brother of the case reported in 1892. In 1917 Greig could find reports of only fourteen examples of this deformity. In 1919 Pamperl recorded a case diagnosed by x-ray examination and collected 35 other cases from the literature⁽³⁾. At that time it was evident that the condition would be more and more frequently recognized as x-ray examinations became more frequent. This has been found to be true. There have been seven reports of studies of families in which several members of the family have been affected. Three other case reports mention the examination of some other members of the family but do not give a complete familial study. In 1922 Goldsmith⁽⁴⁾ reported an important study of the familial occurrence of enlarged parietal foramina. This study of five generations of an American family (the Catlin family) caused him to conclude that: "The hereditary defect did not seem to fall in line with the usual laws of inheritance." His patient was of the third generation. The "mark" was traced upward to the father and grandfather (first and second generation). In the third generation four out of sixteen members studied showed the anomaly. Of twenty-eight members of the fourth and thirty-two members of the fifth generation studied,

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Pinchurst, May 21, 1941.

1. Pendergrass, E. P., and Pepper, O. H. P.: Observations on Process of Ossification in the Formation of Persistent Enlarged Parietal Foramina, *Am. J. Roentgenol.* 41:313 (March) 1939.

2. Greig, D. M.: Perforation of Parietal Bones, *Edinburgh M. J.* 18:203 (March) 1917.

3. Pamperl, R.: Abnormally Large Foramina in the Skull, *Deutsche. Ztschr. f. Chir.* 118:91 (January) 1919.

4. Goldsmith, W. M.: The Catlin Mark, *J. Heredity* 13:69, 1922.

ten were found to have this defect. One member of a pair of twins was affected. In 1924, Cohn reported this anomaly in both of a pair of twins (female) and in their mother⁽⁵⁾. In 1935 Pepper and Pendergrass presented a report on the hereditary occurrence of enlarged parietal foramina⁽⁶⁾. Of nine members representing four generations of a family five had definite enlarged parietal foramina and two showed bilateral foramina of smaller size but larger than normal. In the same paper these authors presented a partial study of a Negro family

which showed three members to be affected. Other reports have appeared in the literature since this.

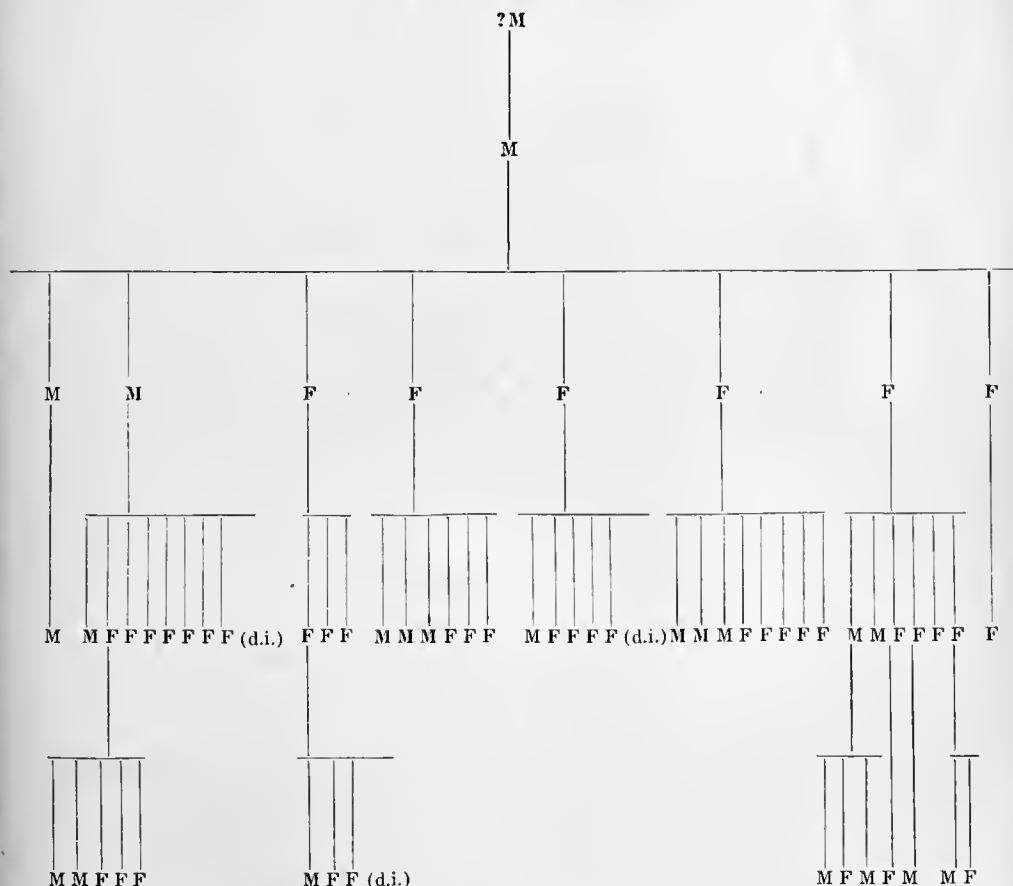
Many other anomalies and developmental defects have been reported in conjunction with this condition. Recently Warkany and Weaver reported "enlarged parietal foramina combined with obesity, hypogenitalism, microphthalmos and mental retardation."⁽⁷⁾ They briefly reviewed the literature and presented many examples to indicate the frequency with which morphologic and functional abnormalities are seen combined with

5. Cohn, Michael: Hereditary Defects in Parietal Bone, *Med. Klinik*, 20:857 (June 22) 1924.

6. Pepper, O. H. P., and Pendergrass, E. P.: Hereditary Occurrence of Enlarged Parietal Foramina, *Am. J. Roentgenol.*, 35:1 (January) 1936.

7. Warkany, J., and Weaver, T. S.: Heredofamilial Deviations, Enlarged Parietal Foramina Combined With Obesity, Hypogenitalism, Microphthalmos and Mental Retardation, *Am. J. Dis. Child.*, 60:1117 (November) 1940.

PEDIGREE OF THE McKENZIE FAMILY, SHOWING OCCURRENCE OF ENLARGED PARIETAL FORAMINA



Letters in boldface type denote members affected.
d.i. denotes members who died in infancy.

enlarged parietal foramina. Other reports have stressed the familial and hereditary tendency and the absence of other developmental defects.

My study of the McKenzie family is the fourth complete familial study of this condition which I have been able to find recorded in the literature. It reveals the presence of this anomaly certainly in four generations and by hearsay in the fifth generation. In this family no other morphologic or functional abnormalities were found to be present. I personally examined each member reported and found the lesion on routine examination by inspection or palpation or both. Some of the larger lesions were pictured by x-ray, but x-ray examinations were not done on all the members. Doubtless other cases reported as negative would show the lesion if examined roentgenologically. No symptoms, not relative to the anomaly, were present in any individual. The lesions were of all variety of shapes and sizes. Most of them were irregularly angular, but some were symmetrically round. The largest opening occurred in the second generation and measured 10.2 by 4.7 cm. The x-ray report made by Dr. P. W. Flagge is as follows: "This is a very large defect, again showing a complete lack of bone in the sagittal line, except for a spur about 1.5 cm. in length on the lower border. The aperture measures 4.7 cm. by 10.2 cm. in the greatest diameter." The smallest lesion recorded was about 1 cm. in diameter. The youngest member examined was 8 months of age. The oldest member was 83 years of age. All are living. Two children in the third and one in the fourth generation had died. Whether or not the anomaly was present in these three children is not known.

The first patient that I saw who presented this anomaly was a girl $2\frac{1}{2}$ years of age. She was of the fourth generation that I was able to check. When she was $5\frac{1}{2}$ years of age the openings were of moderate size (3 x 1 cm. and 1.8 x .8 cm.). Although I did not measure the openings when I first saw her at $2\frac{1}{2}$ years of age my impression is that they had decreased considerably in size in the intervening three years. Her father is the individual referred to above as having the largest opening in the whole group. Her grandfather had an unusually large opening but I do not have the exact measurements. Her great grandfather, aged 83, also had a

bilateral opening. He stated that his father died when he himself was quite a child, but he thought that he too presented what he called the "McKenzie soft head".

Of eight persons in the second generation six had bilateral foramina. Of thirty-six persons in the third generation, fourteen had bilateral foramina and three had single openings. Of sixteen persons in the fourth generation three had bilateral openings and one a single parietal opening. Only one pair of twins were in this group, and one of these was affected.

Summary

Sixty-one persons in four generations of one family are described. Twenty-eight presented enlarged parietal foramina. The youngest was 8 months of age. The oldest was 83 years of age. No other anomalies or developmental defects were present in any member of this family.

Comment

Although I have read practically all the reported cases of this condition I have made no attempt to give a complete bibliography because that was done by F. J. Halbertsma in June, 1940⁽⁸⁾, and by Warkany and Weaver in November, 1940⁽⁷⁾. This condition is probably not uncommon. It is primarily of interest because of its hereditary and familial incidence.

This condition is of no clinical importance except in the differential diagnosis of possible pathological conditions.

8. Halbertsma, T.: Fenestrae Parietales Symmetricae, Arch. Dis. Childhood 15:115 (June) 1940.

The detrimental effect of war on the morbidity and mortality of tuberculosis is well known from the lesson of the Great War of 1914-1918. According to the consensus of opinion it was due to a multitude of factors and circumstances, such as malnutrition, overcrowding, overwork and, in some countries, suspension or curtailing of public health services, diminution of beds available for treatment, etc. These conditions and circumstances cannot be eliminated from war and a similar increase in mortality and morbidity of tuberculosis is generally expected. In England there are at least five additional major factors present at this time which did not exist in the last war: intensive air raids, blackout, mass migration of the population, shelter life and conscription of women. Closer scrutiny of the tuberculosis problem, however, raises some hope for a more optimistic view. In 1914-18 the diagnosis of early tuberculosis was a difficult one, tuberculosis warfare was undeveloped, collapse therapy was restricted to a few cases and thoracic surgery did not exist. Whether these methods are sufficient to prevent an increase in the disease cannot be answered yet.—F. Kellerman, M.D., Tubercle, Sept. 1941.

THE MANAGEMENT OF THE EARLY DIABETIC PATIENT

J. C. PASS FEARRINGTON, M. D.
WINSTON-SALEM

The management of the early diabetic is the most important phase of diabetic control. There should be a careful evaluation of mental, physical, and economic factors, as well as a complete history, careful physical examination and laboratory study. Treatment includes directing the diet and teaching the patient to adapt himself to his environment. The family of the diabetic patient should be instructed as to the preparation of the diet and the use of insulin. The patient should realize that he can be a normal individual by accepting his condition and its limitations, and managing it properly.

Diagnosis

The doctor's first problem is the diagnosis of the condition. Joslin has well said that anyone must be considered a diabetic whose urine reduces Benedict's solution until he is proved otherwise. The diagnosis is easily confirmed by the finding of abnormal venous blood sugar levels. A blood sugar over 130 mg. per 100 cc. before breakfast and over 170 mg. per 100 cc. after meals is considered high. It must be remembered that the diet of the patient for two or three days preceding such tests must contain a sufficient amount of carbohydrate to give a fair blood sugar reading. Persons who suspect diabetic conditions often resort to diets high in fat and low in carbohydrate.

Positive urine and blood tests are usually confirmed by the history of weight loss, increased thirst, frequency of urination and increased hunger. A further aid to the doctor is a family history of diabetes, or a history of other endocrine disorders or height and weight abnormalities in the patient or his family. The average duration of life in the family is also relevant.

Age Groups

Diabetics may be divided into three groups according to ages: those under 20, those from 20 to 40, and those over 40. Each

group has different problems and requires a different approach.

In patients under 20 there is frequently a hereditary factor. Forty-seven per cent of my patients in this group gave a family history of diabetes. Only 4 per cent were overweight. Severe types of diabetes are frequently met in this group, but improvement is rapid with proper care. Local and general infections are important factors. It is desirable for the patient to maintain his weight at the average level or slightly above, because of the possibility of tuberculosis. The psychological factors of adolescence make this group a most difficult one to handle.

In the group from 20 to 40 years of age hereditary factors were present in 33 per cent of my patients, and 19 per cent were overweight. These patients should maintain approximately the average weight for their sex, age, and height. They should be warned of the dangers of marriage into a family with a diabetic history. Special care is necessary for pregnant diabetic women to guard against toxemia, and the infant should receive particular care following delivery.

In the group over 40 hereditary factors were found in only 24 per cent, but 81 per cent were overweight. Care should be taken to prevent cardiovascular accidents by reducing weight, maintaining low blood cholesterol, and giving particular attention to the cardiovascular system and the extremities.

Treatment

Laboratory tests of the blood and urine should be made for all ages of diabetics. In addition, the following practices are essential:

1. Teaching the patient to make his own qualitative Benedict tests and Gerhardts aceto-acetic acid test.
2. Occasional tests for blood sugar after meals.
3. Periodic tests for blood cholesterol.
4. Occasional twenty-four hour quantitative urine sugar tests.

The last procedure is of especial importance since we are using today slower, longer-acting insulins such as protamine zinc insulin, which acts over a period of twenty-four to thirty-six hours. Single urine and blood sugar tests, although of some

value, are not of the same significance as with regular insulin.

Diabetic patients under 20 years are usually underweight before developing diabetes. In view of this fact and the fact that this is the age period in which tuberculosis is most frequently found, these patients should have a routine tuberculin test, followed by chest x-rays in those with a positive reaction. In the group from 20 to 40 years the weight follows the normal standards.

Overweight is found in 76 per cent of patients over 40 before the onset of diabetes. This excessive fat strains the cardiovascular system, and necessitates special laboratory study and tests for cardiovascular efficiency, such as electrocardiograms, functional heart tests, and functional tests of the extremities.

Pregnancy in the diabetic patient calls for particular care. Hormone studies are valuable. Prolan, serum estrin and urinary pregnandiol tests indicate the necessity for substitution therapy. Dr. White⁽¹⁾ has cut fetal fatalities in diabetic patients from 32 per cent in 1936 to 6 per cent in 1940 by such studies at the New England Deaconess Hospital. Her practice has been to perform cesarean section just before labor is due and to give glucose to the baby for two or three days following birth in order to prevent the hypoglycemic reactions which occasionally occur in children of diabetic mothers. In the care of eleven diabetic mothers I have not employed hormonal studies, but have used estrone and progesterone in large quantities according to clinical indications. Cesarean sections were done by Dr. Richard Spicer and glucose was given to the babies. We have lost no mothers or babies and have had no toxemias of pregnancy.

The handling of a diabetic child has a psychological aspect. Although the child should understand that his food must be simple and carefully calculated and weighed, some responsible adult should see that the food is prepared properly and that the child's environment is normal. With the school child, arrangements must be made for between-meal lunches and observation of the child for insulin shock.

For older diabetic patients the employer should provide time for between-meal lunches. The status of diabetics in industry is yet uncertain, because of the dangers of

hypoglycemic reactions in a person handling machinery. A recent article⁽²⁾ suggests the maintenance of high blood sugars in order to guard against hypoglycemic reactions, and questions the general belief that high blood sugars are damaging. The authors state that their patients in whom the blood sugar level was kept high showed no diabetic symptoms.

The doctor must emphasize to the patient the importance of the following points:

1. Qualitative urine tests for sugar and aceto-acetic acid test.
2. Proper injection of insulin.
3. The prevention and correction of insulin shock resulting from over-activity.
4. Care of the extremities against infection and early treatment of foot infection.
5. Care of acute infections, such as colds and boils.
6. Weighing of foods and preparation of the diet.

I do not believe that people can ever estimate food weights. Therefore I compel all diabetic patients, regardless of age, occupation, or the severity of the disease, to buy scales and use them. Volume measuring of foods is very inaccurate by comparison with weighing. Accuracy is more important than ever with the use of protamine zinc insulin.

The arrangement of the diabetic diet is illustrated in the following typical case reports.

Case 1. A Mild Diabetic Without Symptoms

The patient was a male, 40 years of age. His height was 5 feet, 9 inches; his weight, 190 pounds. A positive reaction for sugar was discovered in an insurance examination. The hereditary factor was absent, and there were no diabetic symptoms. The patient's mother died of a cerebral accident at the age of 49. She was 5 feet 2 inches tall and weighed 170 pounds. His father, height 5 feet 7 inches, weight 220 pounds, died of a coronary occlusion at 54.

The patient's blood sugar before breakfast was 140 mg. per 100 cc.; after breakfast, 190 mg.

Theoretically the patient's weight should have been 162 pounds. With a 5 per cent reduction for cardiovascular safety, his weight should ideally be 154 pounds, or 70

1. White, P., and Hunt, H.: Prediction and Prevention of Pregnancy Accidents in Diabetes, J. A. M. A. 115:2039 (Dec. 14) 1940.

2. Tolstod, E. and Weber, F. C., Jr.: Protamine Zinc Insulin: A Clinical Study, Arch. Int. Med. 66:670 (Sept.) 1940.

kilograms. (To convert pounds into kilograms, multiply by .45.) The caloric requirement per kilogram for moderate activity is 30 calories, which would mean that this patient required 2100 calories per day. The daily protein requirement is 1 Gm. per kilogram, or 70 Gm. of protein for this patient. One gram of protein is equal to 4 calories, so he should receive 280 calories of protein daily. When this is subtracted from 2100 (the total caloric requirement), 1820 calories are left to be supplied in carbohydrate and fat. The ratio of carbohydrate to fat in these diets is 2:1, 1 Gm. of carbohydrate is equal to 4 calories, and 1 Gm. of fat gives 9 calories. We obtain the carbohydrate-fat factor in the following manner:

$$\begin{array}{rcl} 2 \text{ (Gm. of carbohydrate)} \times 4 & = & 8 \\ 1 \text{ (Gm. of fat)} \times 9 & = & 9 \end{array}$$

$$\text{Carbohydrate: fat factor} \quad \frac{17}{17}$$

Dividing this factor into the number of calories to be supplied in fat and carbohydrate (1820), we obtain a factor divisor of 107 Gm., which is the total amount of fat and one half the amount of carbohydrate the patient should receive. The patient, therefore, was told that he should eat 214 Gm. of carbohydrate, 107 Gm. of fat, and 70 Gm. of protein daily. This was divided among his six daily meals in the following manner:

Breakfast:

Carbohydrate—25 Gm.
Protein—11 Gm. (1/6 the daily ration)
Fat —17 Gm. (1/6 the daily ration)

10 a.m. lunch—10 Gm. carbohydrate (This, plus the 25 Gm. for breakfast, is 1/6 the daily ration.)

Dinner:

Carbohydrate—50 Gm.
Protein—22 Gm. (1/3 the daily ration)
Fat —34 Gm. (1/3 the daily ration)

3:30 p.m. lunch—20 Gm. carbohydrate (This, plus the 50 Gm. for dinner, is 1/3 the daily ration.)

Supper:

Carbohydrate—70 Gm.
Protein—25 Gm.
Fat—45 Gm.

Bedtime lunch:

Carbohydrate—36 Gm.
Protein—10 Gm.
Fat—8 Gm.

These amounts plus the supper allowance equal $\frac{1}{2}$ the total daily ration of each type of food.

The ratio of carbohydrate to fat in this diet (2:1) may be considered high in view

of Allen's work⁽³⁾ showing that tolerance was maintained and improved by under-nutrition and low carbohydrate diet. Haist, Campbell and Best⁽⁴⁾ also showed that diabetes can be prevented in dogs given anterior-pituitary extract by a low carbohydrate diet, undernutrition, and insulin. I believe, however, that the importance of carbohydrate in preventing early arteriosclerosis outweighs the possible loss of some tolerance.

It has been found that patients with impaired sugar tolerance tolerate foods less well at breakfast, but that tolerance improves as the day progresses, and that the carbohydrate-protein lunch before retiring increases the patient's tolerance for breakfast the next morning.

I have found by sad experience that this group of asymptomatic patients must be treated as real diabetics. Their foods must be weighed, the urine tested, and a slow weight loss encouraged in order to maintain and improve sugar tolerance. Probably insulin will not be needed, but the patient will need guidance and cardiovascular studies. In brief, our aims in dealing with this group are the following:

1. To adjust the patient's weight to the desired level to improve or maintain his insulin reserve.

2. To defer, minimize and treat early cardiovascular accidents to which he is heir.

We must minimize diabetes and arteriosclerotic factors by giving high carbohydrate to fat ratios, reducing weight, limiting the cholesterol content of the diet, reducing nervous and physical tension, and guarding against damage to extremities. This patient is approaching the age-range in which both of his parents succumbed to cardiovascular disease.

Case 2. The Patient With Early Diabetic Symptoms

This case is very much like the first except that the patient had the diabetic symptoms of weight loss and increased thirst and hunger. A positive urine sugar was discovered by a local doctor. The hereditary factor was absent. The patient's mother and father were both living at 65. The mother had hypertension, and was 5 feet 3 inches tall and weighed 155 pounds. The father,

3. Allen, Frederick, M.: Studies Concerning Diabetes, J. A. M. A. 83:939 (Sept. 12) 1914.

4. Haist, R. E., Campbell, J., and Best, C. H.: Prevention of Diabetes, New England J. Med., 223:997 (Oct. 17) 1940.

who had some evidence^o of coronary disease, weighed 185 pounds and was 5 feet 8 inches tall.

The patient's blood sugar was found to be 170 mg. per 100 cc. before breakfast and 220 mg. after breakfast.

The patient's ideal weight was estimated to be 154 pounds, the same as that of the first patient. The diet, therefore, is identical with that outlined in case 1. In this case, however, substitution therapy is necessary. Protamine zinc insulin is given at breakfast, and the patient's urine is checked before and after meals. After the urine is found to be negative throughout the day (unless complications develop) the blood sugars are checked before breakfast, at 10 a.m., and at 3 p.m. The patient's activity and other factors which might produce insulin shock are regulated.

This type of diet and protamine zinc insulin correct 55 per cent of all my diabetic cases, but the disease must be reasonably mild and the patient's habits regular.

Case 3. A Juvenile Diabetic

The patient was a 15 year old male, height 5 feet 11 inches, weight 135 pounds. A positive urine reaction for sugar was discovered by a doctor who examined the patient because of his tired feeling and increased thirst. The patient's father and maternal uncle had diabetes. His mother was 45 years old, and in good health. Her height was 5 feet 2 inches, her weight 135 pounds. The father was 48, and was found to be diabetic at 41. He was 5 feet 11 inches tall and weighed 175 pounds.

The patient had lost 17 pounds in two months and complained of increased thirst and urination, and muscle cramps at night. His blood sugar was 190 mg. per 100 cc. before breakfast and 250 mg. after breakfast.

Theoretically the patient's correct weight was 154 pounds, or 70 kilograms. A boy's caloric requirement is 40 calories per kilogram—2800 calories for this patient. His protein requirement is $1\frac{1}{2}$ Gm. per kilogram, which would be 105 Gm. or 420 calories of protein per day. The carbohydrate-fat ratio is again 2:1, and 2380 calories are left to be supplied in carbohydrates and fats. This number is divided by the carbohydrate-fat factor of 17 (obtained as in case 1), giving a factor divisor of 140 Gm. Therefore the patient's daily diet must

contain 280 Gm. of carbohydrate (140×2), 140 Gm. of fat (140×1), and 105 Gm. of protein. One third of the daily ration is served at each meal, with 30 per cent of the dinner allowance being moved to 10 a.m. Breakfast and dinner must be served within four hours.

Substitution therapy was also necessary for this patient, and he was begun on regular insulin, 40 units at breakfast and 20 at supper. This dosage was regulated according to the urinary findings, blood sugars and symptoms.

The adolescent type of case should respond well to treatment, and tolerance will be improved by maintaining low blood sugars. Adolescent diabetics are difficult to handle, for they assume no responsibility. It is not always the best procedure to remove the patient from all athletic activities. This boy, who is in school in the morning at a sedentary occupation, will have most of his food at this period, and his blood sugar will be controlled by regular insulin, which will be practically consumed during this period. In the afternoon, when he is participating in athletics, he will burn up much of his carbohydrate reserve, yet he will run less risk of reaction from regular insulin (which is usually used in four to six hours) than from crystalline or protamine zinc insulin, which is always a menace under severe physical strain.

Type of Insulin

There are some diabetics whose dose of protamine zinc insulin will control blood sugar during the day, but who will become hypoglycemic in the early morning, even if 50 per cent of the evening allowance of carbohydrate and protein is given at bedtime. This group is known as Woodyatt's "brittle" type of case. For these patients we must mix protamine zinc insulin with quicker and more limited types of insulin. Regular insulin is effective over a period of five to seven hours when used with protamine zinc insulin, and the effect of crystalline insulin is felt for twelve to fourteen hours when it is used with protamine zinc insulin.

The type of insulin employed with protamine zinc insulin depends upon the manner in which the food intake is divided. If the patient prefers a large breakfast and dinner with a small supper, a large morning lunch, and a small evening lunch, give regular insulin plus protamine zinc insulin at breakfast,

If he eats a moderate breakfast with a large dinner and supper and lunches between meals, give crystalline insulin plus protamine zinc insulin at breakfast. In the first group the following rules should be applied:

1. Use three times as much regular insulin as protamine zinc insulin (30 units of regular and 10 units of protamine zinc insulin).
2. Increase protamine zinc insulin until the urine tests at 10 p.m. and before breakfast show a green to yellow (qualitative Benedict's) reaction.
3. Increase regular insulin until the tests before and after meals are negative.
4. Increase protamine zinc insulin until urine tests before breakfast and at 10 p.m. are negative.

Abstract of Discussion

Dr. O. Norris Smith (Greensboro): My first reaction to Dr. Fearrington's paper was that it makes the treatment of diabetes sound more difficult than it is.

I thoroughly agree with Dr. Fearrington that every overweight diabetic patient should have his weight reduced by dietary control. One hospital in Philadelphia has two diabetic clinics in two different medical services. The man in charge of one clinic follows the hypothesis of Allen that weight should be reduced. In the other clinic the chief for some reason prefers to allow the patient to eat excessively and maintain weight. Sixteen per cent of his patients require insulin in large doses.

There are one or two points that I would like to bring out. First is the importance of an optimistic approach to the diabetic patient. In Greensboro a year ago two diabetics committed suicide within a period of three months. I am glad that neither of them was my patient.

In the diabetic woman insulin should be omitted during early pregnancy, and should then be increased from time to time. Very shortly after delivery, the dose can be returned to almost the initial level.

I should like to emphasize the procedure outlined by Haist, Campbell and Best in the *New England Journal of Medicine* last fall. Their work was experimental but it was extremely suggestive. They found that a low calorie diet and the early use of insulin in controlling diabetes materially increases the amount of carbohydrate tolerance that the patient regains. We all know that every patient who goes into diabetic coma loses some carbohydrate tolerance and requires larger doses of insulin subsequently. There are several practical considerations on which I disagree with these authors, however. One is the lack of urine check following protamine zinc insulin and the disregard of the blood sugar unless it is excessive, in which case they increase the dose of protamine zinc insulin and recommend a bedtime meal to guard against shock in the morning.

I believe that actual weighing of food is necessary in a very small proportion of diabetic patients. Doing away with this procedure is certainly part of the optimistic approach. I have used with complete satisfaction a group of stock diets suggested

by the North Carolina Dietitians Association. They are using them in a great many hospitals in the state. These diets are made up for any number of calories you want. I certainly do not feel that it is necessary for a doctor to sit down and laboriously construct a diet for every diabetic patient, when a stock diet properly used will suffice in certainly 95 per cent of the cases.

Dr. L. A. Crowell, Jr. (Lincolnton): With some things that Dr. Fearrington said I agree heartily, and with some I disagree. Some of the things I am going to say will probably be considered unscientific, but I have a series of nearly 300 living diabetic patients who, I believe, are doing as well as the average. The first thing I want to discuss is the diet. It is well to know how to sit down and figure out theoretically the proper diet for each individual patient, but there are many variations that we cannot figure. I have a series of diets ranging from about 1000 calories up to 2500, one of which I give the patient when he first comes into the hospital. I always start the diet and insulin on the same day. It used to be the practice to decrease the diet gradually until the patient's urine was sugar free, then build up the insulin dose and the diet at the same time. I think that this practice is a waste of time. We put the patient on a diet roughly estimated to meet his requirements. No attempt is made to get the exact scientific amount, and the diet is governed by the patient's appetite or weight curve and his sense of well being. The insulin is then regulated to suit the diet.

One thing I do insist on is that every diabetic have a diabetic scale. Every one of the 290 patients I have treated have bought diabetic scales, and I suppose I have as high a percentage of indigent patients as anybody.

Dr. W. Raney Stanford (Durham): It has been my practice to regulate the diet and then fit the insulin dosage to it. In very high carbohydrate diets the patient is a little more likely to get insulin reactions. I use a moderate carbohydrate diet, usually 150 or 160 Gm. a day. I think that is about what Joslin uses.

With protamine zinc insulin we gradually increase the dose until the morning blood sugar is somewhere between 120 and 140 mg. per 100 cc. If it is lower, the patient might get a reaction.

Dr. Fearrington: As to weighing food, I have found out that the people who do not weigh food get in trouble, and that those who do weigh it are much better regulated.

Dr. Crowell's idea of supplying diabetic patients with a diet already worked out may be all right, but I think that every doctor ought to know the scientific basis for such a diet.

The juvenile diabetic now lives to hand the disease down to more juveniles. I have 53 juvenile diabetic patients who will transmit the disease to well over 1000 children. The problem of diabetes, then, is bound to increase.

The Peritoneoscope. — We have no desire to possess a peritoneoscope. We have seen it used elsewhere. It is brutal and futile. The shock of inflating the peritoneal cavity with air and the danger of perforating the gut are too great and the keyhole view is unsatisfactory even for the most ardent Peeping Tom.—William J. Carrington: *Differential Diagnosis of Acute Lower Abdominal Lesions in the Female*, J. M. Soc. New Jersey 38: 504 (Sept.) 1941.

THE TREATMENT OF BURNS WITH A SPRAY OF SULFADIAZINE

Report of a Case

W. EUGENE KEITER, M. D.

KINSTON

C. T., a colored male, aged 18 months, fell backward into a tub of scalding water on January 14, 1942. He was brought to the Memorial General Hospital at Kinston within an hour of the accident. The skin was blistered and sloughing over an area extending from the neck to the popliteal regions posteriorly, over the lateral aspects of the thighs and abdomen, over the anterior and upper inner aspects of the thighs, the genitals, and lower abdomen. The child was crying with pain but was not in shock. He was trembling and shivering with cold and excitement.

The loose, pigmented skin was removed by grasping it with sterile gauze. It came off in sheets, leaving the deep layers pink. As

fast as it was removed an assistant sprayed the area with an aqueous solution of sulfadiazine 3 per cent and triethanolamine 8 per cent⁽¹⁾. The child was put under a light cradle and the spray was applied almost continuously during the first two or three hours, and then at intervals of one hour. Opiates were not given, since the spray seemed to ease his pain. Fifteen hundred units of antitetanic serum were given.

An intravenous cannula was put in the left saphenous vein anterior to the internal malleolus and 5 per cent dextrose in Ringer's solution was given as a continuous intravenous drip. Two hundred cubic centimeters of citrated blood were given through this cannula about three hours after the accident and again the following morning, after which the intravenous drip was discontinued.

The first outstanding feature in the child's

1. Pickrell, K. L.: New Treatment of Burns (Spraying Solution of Sulfadiazine, Sulfanilamide Derivative): Preliminary Report, Bull. Johns Hopkins Hosp. 69:217 (August) 1941.



Fig. 1. C. T. on January 17, 1942.

progress was a surprising absence of toxic symptoms during the first three days. These were of course combatted to a great extent by the intravenous drip and the two transfusions given during the first twenty-four hours. In our previous experience with burns of comparable extent, however, we have always encountered severe toxemia despite fluids and transfusions. Therefore we do not believe that these general measures were altogether responsible for the absence of toxic symptoms.

The second outstanding feature was the absence of infection in the burned area. The spray caused a beautiful transparent eschar, not unlike pliofilm or cellophane in appearance, to form. Islands of epithelial regenera-

tion showing black pigment appeared within the first four or five days. These were plainly visible through the eschar. The child voided on his thighs, wetting the bed frequently. He developed a diarrhea on January 20 and frequently soiled the bed and the burned area with feces, yet no serious infection ever occurred in the burned area about the genital region. We attributed this to the continuous cleansing of the region with peroxide and spraying with the sulfadiazine mixture.

The third outstanding feature was the rapidity of healing and the short period of hospitalization. As fast as the eschar sloughed White's "A and D Ointment" was applied. This apparently hastened epitheli-



Fig. 2. C. T. on February 5, 1942.

zation. The eschar began sloughing on the fourth or fifth day. On February 4 the child was allowed to be up about the hospital, wearing clothes. He was discharged fully dressed on February 7.

The chief advantage of this treatment seems to be in the early stages: in allaying pain, preventing toxemia, and combatting infection.

I wish to thank Miss Mildred Ringle, Medical Technologist, Memorial General Hospital, for photographing the child. I also wish to thank Dr. Fleming Fuller for helping with the debridement and first application of the treatment.

MECKEL'S DIVERTICULUM AND ITS COMPLICATIONS

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WINSTON-SALEM

During the past ten years reports on Meckel's diverticulum and its complications have become increasingly frequent in the literature, and correct preoperative diagnoses have become much less rare.

Lavater reported observations on a diverticulum of the terminal ileum in 1671, and Ruysch, in 1707 and Morgagni in 1769 discussed this condition. However, Meckel (1781-1833) is given credit for the association of the diverticulum with the omphalo-mesenteric or vitelline duct.

Normally this structure disappears during embryological development, but in about 1.5 per cent of individuals it persists, varying from an outpouching on the antimesenteric border of the lower ileum to a continuous tract with an external opening at the umbilicus. Frequently the diverticulum is attached to the peritoneal side of the umbilicus by a fibrous band, and at times the structure is attached flush to the under side, with no opening to the exterior. It contains all the coats of the ileum and, in addition, gastric mucosa and pancreatic tissue at times. Gastric mucosa is present in 13 per cent of the cases, according to Curd⁽¹⁾, who studied non-pathologic cases at autopsy. However, many writers have recorded much higher figures; Holmes and Koplik found gastric mucosa in 67 per cent of pathological cases. This structure is usually 50 to 90 cm. from the ileocecal valve, although the distance

varies from a few centimeters to 192 cm. One case has been reported in which the duct arose from the appendix itself⁽²⁾.

This anomaly occurs much more frequently in males. The ratio of occurrence in males and females is about 3:1. No plausible reason has so far been advanced for this disproportion.

The majority of writers find that complications are most apt to be discovered in children under 15 years of age. Cobb⁽³⁾ reported 74 per cent of his cases of Meckel's diverticulum with peptic ulcer to be in patients under this age, and most of these to be under 5.

There are four types of pathologic lesions found most frequently at operation: (1) Simple peptic ulcer or ruptured peptic ulcer; (2) obstruction; (3) inflammation; (4) rarely, some type of tumor.

The most common complication reported is that of peptic ulcer. Miller and Wallace⁽⁴⁾ in a group of 201 cases abstracted from the literature found that 46.2 per cent had peptic ulcer. Prior to rupture the outstanding symptom is blood in the stool. Cobb⁽³⁾ reported that 72 per cent of the 100 cases analyzed by him presented this symptom at one time or another. The blood is usually dark red and unmixed with stool, and often contains clots. Prior to, or at the time of passage, there is sometimes colicky pain in the lower abdomen or about the umbilicus. These patients usually have two or more hemorrhages before being operated upon, and nearly always show secondary anemia.

Diverticulitis *per se* is apparently less frequently a complication than was formerly believed. Miller and Wallace⁽⁴⁾ found only 4.47 per cent of their group of cases to be inflammatory. On the other hand, Womack and Siegert⁽⁵⁾ reported that 21 per cent of their 19 cases were inflammatory. These figures exclude, of course, that large group of cases of ulcer and its complications. The symptoms of diverticulitis are those of an inflammatory reaction in the region of the umbilicus or a little to the right or left. Pain usually begins about the umbilicus or to the right of it, less frequently to the left.

Read before the Forsyth County Medical Society, Winston-Salem, October 11, 1941.

1. Curd, Howard H.: A Histologic Study of Meckel's Diverticulum, Arch. Surg. 32:506-528 (March) 1936.

2. Hadley, M. N. and Cogswell, H. D.: Unusual Origin of a Meckel's Diverticulum From the Base of the Appendix, J. A. M. A. 106:537-538 (Feb. 15) 1936.

3. Cobb, Donnell B.: Meckel's Diverticulum With Peptic Ulcer, Ann. Surg. 103:747-764 (May) 1936.

4. Miller, Richard H. and Wallace, Richard H.: Meckel's Diverticulum in Acute Abdominal Emergencies, Ann. Surg. 98:713-721 (Oct.) 1933.

5. Womack, Nathan A. and Siegert, R. B.: Surgical Aspects of Lesions of Meckel's Diverticulum, Ann. Surg. 108:221-236 (August) 1938.

It is often colicky in nature and is followed by nausea and vomiting. There is leukocytosis and later fever. Locally, there are muscle spasm and tenderness, with rebound tenderness appearing later. Following rupture the signs are those of peritoneal soiling. In some cases they tend to localize and in some they do not. Mention should be made of the fact that diverticulitis is sometimes complicated by some form of obstruction.

It should also be noted that in children peptic ulcer is the most common complication of Meckel's diverticulum, whereas in adults most of the reports concern some type of obstruction or inflammatory reaction.

It is readily understood how intestinal obstruction can occur as a complication when one visualizes the duct attached to the umbilicus itself or to some other area in the abdominal cavity by a band. It is easy to see how a loop may slip beneath the band and become obstructed, or a volvulus may occur, with the fixed distal attachment acting as a turning point. Intussusception also occurs and is more frequent in children in those cases without a fixed attachment. Twenty-six per cent of Womack and Siegert's cases⁽⁵⁾ had some type of obstruction. Of the cases analyzed by Miller and Wallace⁽⁴⁾, 44 per cent presented some type of obstruction.

The finding of a tumor in patients with Meckel's diverticulum has been rare. They are usually "carcinoid" tumors, and occasionally lipomas and fibromas occur. Nygaard and Walters⁽⁶⁾ found reports of 6 cases of adenocarcinoma and 12 cases of sarcoma in the literature and added 2 more cases of sarcoma. These cases showed no evidence of metastasis, although there had been recurrences in 2 cases, both five years after removal. Some of them presented no symptoms, some had abdominal "distress" or pain, and in some a palpable tumor was present.

The diagnosis of Meckel's diverticulum seems to be quite difficult. However, in children with blood in the stools, abdominal cramps, and secondary anemia with no evidence of blood dyscrasia, the diagnosis should be made in a high percentage of cases. In general one must have a high index of suspicion for this lesion to diagnose it

preoperatively. In inflammatory lesions with pain and tenderness near the umbilicus (most often to the right), which are not typical of acute appendicitis, one should certainly consider this condition. It is well to note that the usual diagnosis is that of acute or "chronic" appendicitis.

In patients presenting signs and symptoms of intestinal obstruction, particularly in those under 40 and with no obvious etiological factor, one should suspect this condition.

An uncomplicated and unpalpable tumor will probably not be diagnosed except by x-ray.

Pfahler in 1934⁽⁷⁾ published an x-ray picture of a Meckel's diverticulum filled with barium. He made the diagnosis and verified it at operation. Since then other reports have appeared in which this condition was diagnosed roentgenologically⁽⁸⁾. Pfahler says that these cases show characteristics belonging to any intestinal diverticulum. "The diverticulum cannot be filled with barium mixture if it is already filled with some other material. It is apt to show definite peristalsis. It is smooth in outline and it retains its position at a fixed point. Examinations should be careful and repeated. Observations should be long and made in every position." Following suspected rupture a flat plate or lateral plate will sometimes show pneumoperitoneum.

As is to be suspected the mortality of operation varies. Hudson reported an operative mortality of 22 per cent; Cobb (with peptic ulcer) of 27 per cent⁽³⁾, and Everhart of 57 per cent⁽⁹⁾. The mortality varies with the complication present, the length of delay before operation, and the skill of the surgeon. In general the earlier the condition is attacked, the lower will be the mortality.

In the 12 cases operated on at the City Memorial Hospital from January, 1936, to October, 1941, there were no deaths. The operations were performed by several different men. The series contained no case of perforation. The type of operation employed was excision and inversion, and in one case, resection. Simple excision carries the lowest mortality, but a small amount of

7. Pfahler, George E.: The Roentgenological Diagnosis of Meckel's Diverticulum. *Surg., Gynec., and Obst.* 59:929-934 (Dec.) 1934.

8. Ehrenpreis, Bernard: The Roentgen Diagnosis of Meckel's Diverticulum. *Am. J. Roentgenol.* 42:280-284 (August) 1939.

9. Everhart, Merrill W.: The Complications of Meckel's Diverticulum in Infancy and Childhood. *J. Pediat.* 17: 483-489 (Oct.) 1940.

6. Nygaard, K. K. and Walters, Waltman: Malignant Tumors of Meckel's Diverticulum. *Arch. Surg.* 35:1159-1172 (Dec.) 1937.

gastric mucosa may be left behind in some instances. It seems to me, however, that in the acute cases the simplest operation is the procedure of choice.

The youngest patient in this group was 7 months old and the oldest 50. Only 3 were under 15 years of age, and the average age was 22.8 years. There were 9 males and 3 females—a ratio of 3:1.

Symptoms included colicky abdominal pain, nausea and vomiting in the cases of obstruction, bleeding in one case, and anorexia in one elective case in which operation was for retroversion of the uterus and "chronic appendicitis".

Each case with definite complicating pathology showed a leukocyte count above 13,000, except for the case with bleeding and one case in which the count was not recorded. The highest count was in one of the cases of volvulus and was 24,000.

The correct diagnosis was made in only one case, a baby 1 year old with bleeding from the bowel. In one other case a correct diagnosis of intestinal obstruction was made, but the etiological factor was not suggested. In another case of appendiceal abscess with

secondary involvement of a Meckel's diverticulum the abscess was diagnosed correctly, but there was no reason to suspect the presence of the diverticulum. It is of interest that acute or "chronic" appendicitis entered into the diagnosis of every case except 2. In only 2 cases was the appendix really involved, and in these cases the Meckel's diverticulum was an incidental finding. Four of the cases gave a history of previous symptoms.

Of the 12 cases 7 showed definite pathologic lesions of the diverticulum. There were 4 cases of intestinal obstruction. Volvulus was found in 2 cases with the distal attachment to the umbilicus. In one case the distal attachment was to another loop of ileum and in the other it was to the mesentery, through which a loop of ileum had slipped, producing obstruction. There were 2 cases showing acute inflammatory reaction. One of these was primary and the other was secondary to an appendiceal abscess. Unfortunately, in the case of melena in the year old baby, the pathologist failed to demonstrate an ulcer.

All except 2 cases were treated by excision

Case	Sex	Age	Preoperative Diagnosis	W. B. C. Count	First Symptom	Location of Pain	Previous Attacks	Operative Procedure	Hospital Days	Wound Infection	Cm. from Valve	Attachment	Postoperative Diagnosis
1.	M	17	Acute appendicitis	21,600	Colicky pain Vomiting	Umbilicus	None	Excision and Inversion	11	No	92	Umbilicus	Volvulus of Meckel's diverticulum
2.	M	30	Chronic cholecystitis; chronic appendicitis	8,100	Colicky pain	Umbilicus	Indefinite	Excision and Inversion	12	No		Not stated	Meckel's diverticulum
3.	M	25	Acute appendicitis	16,900	Soreness	Epigastrium	None	Excision Inversion, Drain	15	No	92	Not stated	Gangrenous diverticulitis
4.	M	31	Acute appendicitis	None	Epigastric pain	RLQ	Not stated	Excision, Inversion, Drain	16	Yes		Abscess	Appendiceal abscess Subacute diverticulitis
5.	F	23	Chronic appendicitis	8,100	Anorexia	Lower abdomen Back	?	Resection and Anastomosis	16	No		Not stated	Meckel's diverticulum Retroversion of uterus
6.	F	25	Recurrent appendicitis	8,100	Vomiting, Pain	RLQ	Yes	Excision and Inversion	12	No	20	Not stated	Meckel's diverticulum
7.	M	13	Acute appendicitis	13,600	Generalized pain	RLQ	None	Excision and Inversion	11	No		Ileum	Intestinal obstruction Meckel's diverticulum
8.	M	25	Acute appendicitis	21,900	Abdominal pain	RLQ	Indefinite	Excision and Inversion	13	No	60	Umbilicus	Volvulus of Meckel's diverticulum
9.	M	1	Ulcer	8,100	Bleeding		Severe	Excision and Inversion	10	No	60	None	Ulcer of Meckel's diverticulum
10.	F	9	Interval appendectomy following rupture 3 months previously	8,900		RLQ	None	Excision and Inversion	11	No		Ileum	Meckel's diverticulum
11.	M	35	Recurrent appendicitis	13,800	Abdominal pain	Abdomen	None	Excision and Inversion	11	No	20	None	Meckel's diverticulum
12.	M	7 mo.	Intestinal obstruction	9,100	Vomiting for 4 days		None	Excision of Band	9	No		Mesentery	Intestinal obstruction Meckel's diverticulum

and inversion of the stump. The diverticulum was resected in one elective case, and a 7 months old baby who was quite ill with intestinal obstruction due to the Meckel's attachment obstructing a loop of ileum, was treated by excision and inversion of the band and the diverticulum was left *in situ*.

The distance of the anomaly from the ileocecal valve was stated in only 6 cases. In 2 the distance was about 90 cm., in 2 it was 60 cm., and in 2, 20 cm.

Drainage was employed in 2 cases, one of them being the appendiceal abscess. This was the only case in which there was a wound infection. Average hospitalization was twelve days, the longest stay being sixteen days and the shortest nine days.

Conclusion

1. Meckel's diverticulum should be recognized oftener, particularly in those cases with ulcer and hemorrhage, and in those young people with intestinal obstruction for which there is no known etiological factor.

2. The high mortality can be reduced by early operation in the acute cases.

3. In young individuals ulcer is the most frequent complication; in adults obstruction and inflammatory lesions are most common.

MOLDED PLASTER SPLINTS IN THE TREATMENT OF FRACTURES OF THE HAND

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Fractures of the hand require, of course, a variety of treatments and splints, depending upon the location and character of the injury. Fractures of the metacarpal bones not many years ago were put up on such articles as baseballs and roller bandages. More recently light metal splints made by various surgical supply houses and usually listed as "metacarpal splints" have enjoyed a considerable and deserved vogue. Made of light metals, they have been comfortable and, for most fractures, efficient.

There have been two main objections to these commercial splints in our outpatient department. The first has been the failure of the itinerant patient to return the splint. The second objection has been the failure of the splint to fit perfectly the patient's hand.

Both of these objections have been obviated here by the use of molded plaster

From the Alumnance General Hospital. Submitted for publication January 24, 1942.



Fig. 1. Molded plaster splints used in treating fractures of the hand.

splints. A single roll of plaster of paris in a few minutes can be molded into a better splint than can be obtained from manufacturers for several dollars. It is an individual splint that is the exact shape desired for the palm of the patient's hand. If the patient fails to return it, there is no great loss.

The illustrations show two types of molded plaster splints. The first were made by wrapping the plaster around a roller bandage and then molding it to the patient's hand. Later the roller bandage was withdrawn. This type has been discontinued in favor of simple flat plaster molded into the patient's hand. The patient's fingers and the plaster are grasped by the doctor's hand, and the plaster is molded over the doctor's knuckles pressed against it into the patient's palm.

This method of making metacarpal splints is probably used in numerous places, although I have not seen it used or written about. The general use of more expensive and less efficient metal splints is the reason for writing this note.

THE TREATMENT OF CHRONIC IDIOPATHIC ULCERATIVE COLITIS WITH SULFAGUANIDINE

DAVID CAYER, M. D.*

and

JULIAN M. RUFFIN, M. D.†

DURHAM

Derivatives of sulfanilamide have been used in the treatment of chronic idiopathic ulcerative colitis for several years⁽¹⁾. From the Mayo Clinic encouraging results have been reported^(1a) with the use of neoprontosil. Other writers, however, have found this drug to be of little value, and our experience with it at Duke Hospital has been discouraging. Sulfapyridine^(1b), likewise, has been of doubtful value in the treatment of such patients. It has been the feeling of

some observers^(1b) that certain sulfonamide derivatives are efficacious in the treatment of ulcerative colitis, but that toxic manifestations often make it necessary to discontinue therapy before the best clinical results can be attained or properly evaluated.

Recently, sulfanilylguanidine (now called sulfaguanidine), a water soluble sulfonamide derivative which is poorly absorbed from the gastrointestinal tract and has a high anti-bacterial activity, has been described⁽²⁾. These properties have suggested the possible effectiveness of sulfaguanidine in the therapy of infections localized in the intestines, since high concentrations can be attained in the gastrointestinal tract, while the blood and tissue concentrations remain low. Bornstein and Strauss⁽³⁾ studied the action of this drug on different *Salmonella* groups and noted a marked bacteriostatic effect on *Escherichia coli*, *Eberthella typhi*, and *Shigella*, but concluded that its use for types other than the susceptible ones was perhaps contraindicated since the pathogens may flourish while the non-pathogenic organisms are suppressed.

Material

This report is based upon a study of 17 patients having chronic idiopathic ulcerative colitis who were treated with sulfaguanidine. There were 6 males and 11 females ranging in age from 6 to 55 years. The duration of the disease varied from six weeks to nine years. All of these patients were hospitalized, and eight of them had been treated at Duke Hospital on previous occasions. The diagnosis was based upon the characteristic proctoscopic picture, revealing a diffusely inflamed mucosa with pin-point ulcers, or a granular mucosa covered with a bloody exudate. In every case care was taken to exclude such diseases as amebic dysentery, typhoid, bacillary dysentery, carcinoma of the colon, intestinal tuberculosis, and polyposis by stool examination and culture, agglutinations, barium enemas and proctoscopic study. All the cases were considered clinically active at the time of admission.

*Submitted for publication January 13, 1941.

†Assistant in Medicine, Duke University School of Medicine, and Associate Professor of Medicine, Duke University School of Medicine.

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3. Bornstein, S. and Strauss, L.: Selective Action of Sulfanilylguanidine on Different *Salmonella* Types and Its Practical Importance, *Proc. Soc. Exper. Biol. and Med.* 47:112 (May 1) 1941.

Treatment

The patients were fed a low residue diet supplemented by accessory vitamins, antispasmodics, and general supportive therapy, including transfusions when indicated. Four patients received sulfaguanidine by mouth, one by retention enema alone, and twelve both orally and by retention enema. The oral dose was 2 Gm. three times a day. The retention enemas, containing 5 Gm. of the drug, were given twice daily. Urinalysis, hemoglobin and white cell determinations, and blood sulfaguanidine levels were done every third day. Patients were examined by proctoscope twice weekly. The average duration of treatment with sulfaguanidine was fourteen days.

Results of Treatment

The results of treatment are shown in the accompanying table. Four patients showed a marked improvement following their course of treatment. Three of these were seen several months later and were symptom free. The proctoscopic picture was either normal or showed a granular mucosa without pus or blood. The fourth patient died two months after discharge from the hospital; the cause of death is unknown. In 10 patients some improvement was observed after treatment; however, five of these later had relapses, two of which were fulminating and terminated fatally after ileostomy. In 3 patients no appreciable change was observed at the time of discharge from the hospital, but two of these showed marked improvement six weeks later.

RESULTS OF TREATMENT

	No. of Patients
Marked Improvement	4
Some Improvement	10
(5 relapsed later)	
No Improvement	3
(2 improved later)	
Total	17

Toxicity

Two patients had a generalized rash during the course of treatment, but with these exceptions no toxic symptoms were observed. The urine showed no changes during the period of treatment and the blood picture remained unaffected. The highest blood concentration of sulfaguanidine was 3 mg. per 100 cc., the average being 1 mg. even when the patient was receiving 16 Gm. a day.

Stool Cultures

Repeated cultures of the stool were taken by proctoscopic examination in every case. Before treatment the organisms usually found were hemolytic *E. coli*, hemolytic streptococci and non-hemolytic *E. coli*. Barger's bacillus and an anaerobic mixture were found in only a few cases. After treatment the hemolytic organisms were greatly reduced or absent in every case. The drug had little effect upon the colon bacillus. No correlation could be observed between the disappearance of the hemolytic organisms from the stool and the clinical condition of the patient, nor was there any relationship between the apparent effectiveness of the drug and the duration of the disease.

Discussion

In an effort to evaluate the effectiveness of sulfaguanidine in the treatment of chronic idiopathic ulcerative colitis, 17 patients have been studied. All were clinically active at the beginning of the treatment and all were hospitalized. Although marked improvement was observed in 4 patients and some improvement in ten at the end of the period of treatment, this effect cannot be attributed to the drug alone, as such factors as diet, rest, vitamin therapy and psychotherapy all play a more or less important part in the treatment of this disease.

When the results obtained in this series of patients were compared with those in a group of patients receiving non-specific therapy only, no appreciable differences were observed, nor did the drug prove materially more efficacious than other sulfonamide derivatives which had been used previously in the treatment of ulcerative colitis.

Conclusion

Sulfaguanidine is relatively non-toxic and can be used in the doses described with comparative safety. It is possibly of value in the treatment of ulcerative colitis, but certainly is not a specific, and should be regarded only as an adjunct to the usual forms of therapy.

While the school teacher has not more tuberculosis than the average adult, next to the family she provides the greatest opportunity for close prolonged contact with the school child. To require the teacher to provide a health certificate, including chest films, would serve to remove this reservoir of infection.—D. O. N. Lindberg, M.D., Ill. Med. Jour., Oct., 1935.

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SHALL THE POLITICIANS CONTROL OUR HOSPITALS?

The Social Security Board recommends and President Roosevelt passes it on in his Budget Message that "Social Security benefits be extended at this time to include hospitalization." The President adds the significant statement: "I oppose the use of payroll taxes as a means of war finance unless the worker is given his full money's worth in social security." The clear implication is that war finance is to be used as a cover for an expansion of the Social Security program, thus taking advantage of the national emergency to fasten upon the country a permanent and far-reaching program of state medicine.

Hospitalization is the first step in an all-out program of complete medical care. The demand for the addition of professional services is as certain to follow as night follows day. Our experience with hospitalization insurance fully justifies this prediction. While the Social Security Board may deny the intention, the sequence is so logical as to be

inevitable. If this movement succeeds—and it may in a blanket approval of the budget or of the particular section—the medical profession may as well prepare for state medicine in its most objectionable form.

The opposition of the medical profession to state medicine is too well founded and too well known to need repetition. Hospitalization is a real threat to our voluntary system of hospitals which has been developed over a long period of years by private and philanthropic effort. At present, the hospital facilities—notably in the South—are entirely inadequate for a program such as the Social Security Board recommends. Hospitalization provided under the Social Security Act means practically free hospitalization and an invitation to a very large proportion of the population to seek hospital care for minor and chronic ailments that may be safely cared for in the home. The existing hospitals will be crowded beyond their capacity to do efficient work and to provide proper care for the seriously ill, for whom they should be reserved.

The compensation of three dollars a day proposed to be paid to the beneficiary and to the hospitals only on assignment is much below the cost of maintenance under present conditions, and there is, moreover, small chance that the hospitals will get it. This can only mean one of two alternatives—the hospitals must be subsidized by the Government, or the quality of the service must be reduced to the level of an alms house.

The outlook is for increased hospital facilities under governmental control, which means a salaried staff, the restriction of free choice of physician, and a disorganization of the practice of medicine as a free enterprise.

There is at this time less demand than ever before for governmental interference with the normal developments in medical care. Employment and wages are at their peak; farm products are bringing highly remunerative prices; and hospitalization insurance on voluntary plans is meeting with encouraging cooperation of employer and employee. The premium rates are quite within the reach of the larger part of the beneficiaries of social security and all employed persons. Why start a movement for hospitalization at this time, when the Government has about all it can take care of with the most costly war in history on its hands?

THE MORGANTON INVESTIGATION

As the result of a series of newspaper articles by two ex-patients of the State Hospital at Morganton, Governor Broughton appointed a Board of Inquiry to investigate conditions at that institution. This board is composed of five members, and has entered seriously upon the task assigned it. It is apparent that the inquiry will consume much time, but it is to be hoped that the results will justify the time expended.

The irony of the situation is that seven years ago a resolution was adopted by the State Legislature "authorizing the governor to appoint a commission for the study of the insane and mental defectives." A commission of five members, with Dr. Fred Hanes as chairman, was appointed by Governor Ehringhaus. Dr. Lloyd J. Thompson, of the Yale Institute of Human Relations, was employed as Director of the survey, with a staff of three assistants. For a year this group conducted a vastly more thorough and far-reaching study of conditions at all the state hospitals, and at the Caswell Training School, than the present Board can hope to make. In addition, much time and thought were given to various other institutions and conditions that might have a bearing on abnormal mental health in North Carolina. The expense of the survey—amounting to at least \$15,000—was generously borne by the Rockefeller Foundation.

Section 3 of the legislature's resolution provided "That the Commission shall, within ten days after the convening of the General Assembly in 1937, make a report to the General Assembly. The report shall consist of the findings of the Commission as to the best methods of care and treatment of the mentally defective and insane persons. The report shall also contain proposed bills. . . . embracing any changes in the present system now in use in North Carolina for the care and treatment of mentally defective and insane persons which the Commission shall deem to be for the best interests of the people of the State of North Carolina."

The Commission faithfully carried out the task assigned it. The study began in October, 1935, and was finished in October, 1936. On December 8, 1936, the report—a volume of 377 pages, including six and a half pages of bibliography—was transmitted to Governor Ehringhaus. One sentence in Dr. Hanes's letter transmitting the report proved

to be prophetic: "It is too often the fate of official reports to find themselves quietly interred in the oblivion of dusty pigeonholes." The rest of the paragraph read: "Your Commission earnestly hopes that this report which is so filled with stimulating information, not all of which makes pleasant reading for North Carolinians, will receive the careful attention it so richly deserves."

After six years it may be that this hope will be fulfilled, and that the report will be resurrected from the dusty pigeonholes in which it has slumbered since 1936. Perhaps even yet the generous backing given the Commission by the Rockefeller Foundation may prove to be a good investment. It is rather a sad commentary on human nature, however, that it required these melodramatic stories to reawaken interest in the needs of the mentally afflicted.

* * * *

DEFENSE BONDS

Today our nation confronts the greatest crisis in its history. The situation deeply and intimately concerns the members of the Medical Society of the State of North Carolina, both as practitioners of the art of healing, and as citizens of the United States.

The nation needs us in this war. It needs us as surgeons and physicians for both the armed and civilian forces. It likewise needs us as backers of this all-out struggle to preserve freedom in the world. We are a part of the united civilian army which must provide money for the war effort—money for planes, ships, tanks, and guns, money for ammunition, clothing and equipment for the men in service.

Uncle Sam needs sixty billion dollars this year to meet the bill; maybe next year he will need many billions more. We will pay increased taxes, it is true. A part of the money will be obtained from banks and other lending agencies. But we need more than this—much more, and this must come from the pockets of the people. The Government asks that every American lend dollars through the purchase of Defense Savings Bonds and Stamps.

Not only do Defense Savings Bond dollars pay for tools of war. The dollars so invested are withdrawn from consumer purchasing power, which helps to check inflation. For the investor, the Bonds and Stamps represent individual reserves, just as good as cash in the bank, which can be drawn upon whenever a financial need arises.

The Treasury Department offers three series of Defense Savings Bonds: Series E, F and G. Series E Bonds, "The People's Bonds", can be bought only by individuals. These are appreciation bonds which, if carried through to the 10-year maturity date, provide an average annual return of 2.9 per cent upon the investment. The smallest E Bond costs \$18.75 and pays \$25 at maturity. Others cost from \$37.50 (\$50 maturity value) to \$750 (\$1,000 maturity value). A bond of this series may be registered in the names of one or two persons or in the name of one person with a second listed as beneficiary. All post offices and most banks sell "The People's Bonds".

The F and G Bonds are primarily for associations, corporations, and large individual investors. Series F Bonds, like Series E, are appreciation bonds. They are purchased for 74 per cent of their face value, and at the end of the 12-year maturity period provide a return equivalent to an annual interest rate of 2.53 per cent. The smallest of the F Bonds costs \$18.50 and pays \$25 in 12 years; the largest costs \$7,400 and pays \$10,000 at maturity.

The G Bonds, unlike Series E and F Bonds, are sold at par—that is, the cost is the same as the face value. But the G Bonds pay interest semi-annually at the rate of $2\frac{1}{2}$ per cent throughout their 12-year maturity period, thus providing a current income for the investor. Series G Bonds are issued in denominations from \$100 to \$10,000. Only the Treasury Department and Federal Reserve Banks issue F and G Bonds, but most banks will handle applications for them.

The minimum costs of E, F and G Bonds are \$18.75, \$18.50 and \$100 respectively. But these are not the smallest amounts that can be invested in Defense Savings. Smaller amounts of money purchase Defense Savings Stamps, which range in price from 10 cents to \$5.00. When the equivalent of a minimum price bond has been invested in Defense Stamps, they can be turned in for one of the registered interest-bearing bonds.

We, as a united nation, face the future with grim determination. This is total war, and each of us must accept his responsibility for the job to be done. A part of this

job is the budgeting of dollars. We must buy and continue to buy the nation's "freedom" Bonds.

* * * *

WHY A MEDICAL MEETING?

With so many demands upon one's time these strenuous days it is reasonable to expect value received for the expenditure of two or three days away from one's professional duties. To be specific, many a "staff room oracle" declares that he is not repaid for attending medical meetings. Some years ago Dr. Henry Christian, in an *Annals of Internal Medicine* editorial, answered the question, "Why a medical meeting?" so effectively that his editorial is reproduced here as a reminder to plan now to attend the annual meeting of the State Society.

"Physicians can be divided into two great groups, those that are learning and those that are forgetting, those that each year know more, and those that each year know less. There seems no third group, those that are stationary.

"A few physicians increase in knowledge from within and grow from their own doing. These are the innate investigators. The rank and file require outside help to grow and to progress. Books, meetings, contacts, discussions, teachers, are our armamentarium for progress. Like the "spring tonic" of past days, all of us need some of this medicine, at least annually, better if it comes more frequently. A large majority of physicians know their need and seek treatment.

"Things in nature rarely are static; they increase or they decrease; they grow or they decay; they progress or they retrogress. Man's education in many respects resembles things of nature; rarely is it static; when knowledge does not increase, almost always it decreases. Physicians should remember this and make every effort to keep out of the static state and on the side of increase, of growth, of progress.

"Contact with colleagues eager to learn, listening to discussions by those capable of teaching, witnessing demonstrations and clinics, seeing scientific exhibits lead to more reading and better observation of patients. Herein lies medical progress."

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE

Presentation of Case

E. M., a white male aged 35, was first admitted to Vanderbilt University Hospital on November 21, 1930, complaining of stiffness and soreness in the joints. In years past he had experienced migratory joint pains, and four years previously had had pain in the right knee, which was relieved by medicine. Nine weeks before admission practically all of the joints became involved. Swelling and pain were noteworthy; no redness was observed, but he did have low fever. He had remained in bed until he was admitted to the hospital, and had lost 30 pounds in weight.

Physical examination revealed his temperature, pulse, and respirations to be normal except for slight tachycardia. He was obese, and the muscles were flabby. Some limitation of movement was present in both shoulders, but there was no tenderness, redness, or swelling of any of the joints. There was no clubbing of the fingers. The tonsils were enlarged. There was a short apical systolic murmur over the precordium but no other cardiac abnormalities. The urine was clear. The blood was normal except for leukocyte counts of 12,500 and 11,600. A Wassermann test was not performed because the blood specimen was unsatisfactory (hemolysis). The patient was discharged with a diagnosis of chronic multiple arthritis, dental caries, pyorrhea, chronic tonsillitis and obesity.

In the Outpatient Department many teeth were extracted. Blood Wassermann and Kahn tests were negative on January 27, 1931. After January, 1931, the patient was not seen until December, 1933, at which time he reported that he had been well for two years. He returned because of epigastric discomfort, nervousness, a sense of weakness, and a loss of 40 pounds in weight. The heart was not enlarged; the sounds were regular and slow; a blowing apical murmur was present. The blood pressure was 112 systolic, 78 diastolic. Examination of the joints was not remarkable. A fluoroscopic examination of the stomach and duodenum was negative. A stool specimen contained

occult blood. A gastric analysis was normal. The patient failed to return after January, 1934, until his second hospital admission on July 19, 1937.

For several weeks prior to this admission he had been unable to work because of shortness of breath, orthopnea, and edema of the ankles. Two years previously (1935) he had developed a penile lesion, which was diagnosed as syphilis, and was treated locally for a time. A few weeks before the onset of his present illness he went to the City Clinic for a blood test, and was informed that he had syphilis. He received two intravenous injections. He had had shortness of breath for about a year.

The blood pressure on admission was 160 systolic, 90 diastolic. It was noted that the patient was a little cyanotic. Frank clubbing of the fingers was present. Slight edema of the ankles and scrotum was present. The peripheral vessels exhibited excessive pulsation, the pulse was collapsing, and a pistol shot sound was heard over the brachial arteries. The point of maximum impulse was not visible or palpable. Right cardiac dullness measured 4.5 by 12 cm.; retromammary dullness measured 7 cm. The cardiac rate was rapid; the rhythm regular. The first sound was replaced by a loud, smooth systolic murmur. Along the left sternal border a diastolic murmur was audible—loudest at the third left interspace but clearly heard over the right second interspace, where it was associated with a louder systolic murmur. There were moist rales over the lung bases; liver dullness was not increased, and the liver was tender. The urine and routine blood examinations were not remarkable. The Wassermann and Kahn tests were positive. The blood examination was negative. The cerebral spinal fluid contained 4 cells; colloidal mastic and Pandey tests were negative. The cerebrospinal fluid Wassermann test was positive in all dilutions. An electrocardiogram revealed slurred QRS complexes and depressed ST segments; no left ventricular preponderance was noted.

An x-ray of the chest showed the following heart measurements: from the midsternum to the right border 6.2 cm.; from the midsternum to the left border 11.2 cm.; aortic arch, 8.8 cm. There was extensive fibrosis and evidence of passive congestion in the lower lobes, and some fibrosis in the right upper lobe.

The patient was given diuretics and was

digitalized, and he improved greatly. Upon discharge he was instructed to restrict fluids and was placed on bismuth and potassium iodide therapy and maintenance doses of digitalis.

He continued to visit the Outpatient Department, and received bismuth, potassium iodide, and numerous treatments with salyrgan. His weight varied between 160 and 190, depending upon the amount of edema present. Steadily decreasing cardiac reserve finally forced him into the hospital for his third and final admission, on May 12, 1938.

On this admission Cheyne-Stokes respiration was present. The eyes were puffy, the superficial veins full. There was marked orthopnea and marked edema of the lower extremities and back. He was a little cyanotic. Well marked clubbing of the fingers was present. Edema of the retina was observed. Rales were present at the bases of the lungs, and a rather large, tender liver was palpable. The heart signs were essentially as they had been on the previous admission except that the organ appeared to be larger. A systolic murmur was heard over the carotids. The blood pressure was 150 systolic, 70 diastolic. The urine contained albumin (1 plus) but no casts or red blood cells. The Wassermann test was positive. The nonprotein nitrogen was 50 mg. per 100 cc. The stool examination was negative for occult blood. Toward the end of the first week in the hospital—during which time his temperature rose to 100 or 101 F. in the evenings—the patient developed pain over the left chest which was intensified by breathing and coughing. Three days later evidence of apparent consolidation of the left lower lung was noted. The white blood cell count was 13,200. Evidence of congestive failure increased during the second week, and the patient responded poorly to salyrgan therapy. Fever continued, and the leukocyte count was 20,000. On the day of death, May 26, he passed several stools which contained gross blood. Respirations became increasingly difficult and irregular, and finally ceased.

Discussion

DR. TINSLEY R. HARRISON: It is clear, from the record, that the most important site of disease in this patient was the heart. The chief problem is the determination of the type of cardiac disease. It is well to ap-

proach all cases in which there are disorders of the heart from three standpoints: the functional, the anatomical and the etiologic. As regards cardiac function, we may say that this patient had advanced and severe congestive heart failure, which was the chief factor in producing death. Anatomically, we can say that the patient had enlargement of the heart, due no doubt to a combination of dilatation and hypertrophy, and had some dilatation of his aorta. It is also quite clear that the patient had a well marked aortic regurgitation. At this point certainty ceases and we enter the realm of speculation. Did he have stenosis as well as insufficiency of the aortic valve? He lacked some of the classic signs of aortic stenosis, but he had at least a moderately loud systolic murmur at the base which was transmitted into the vessels of the neck. This finding, taken with the rest of the picture, makes me believe it probable that he did have early aortic stenosis. As regards the mitral valve the evidence, while not conclusive, is strongly suggestive of an organic lesion. Had the systolic murmur at the apex appeared late in the disease, one could readily ascribe it to dilatation resulting from disease of the aortic valve. However, the apical murmur came first, and in a patient with his history it seems highly probable that there was organic disease of the mitral valve. Since signs of stenosis were not found, it would appear that the mitral lesion was considerably less advanced at the time of death than the aortic lesion.

The next problem is the difficult one of etiology. Often in medicine we lack a clue as to the etiology of a given condition. Here our problem is quite different. We have so many clues that their very abundance is confusing. Since the patient's first complaint involved the joints one naturally thinks first of rheumatic heart disease. The story points strongly toward rheumatic fever, and indicates not one but several attacks. If such is the case, the statistical probabilities of valvular heart disease on a rheumatic basis are very strong. One can safely predict that something like 80 to 90 per cent of the people who have had repeated attacks of rheumatic fever will eventually develop endocardial disease. Furthermore, the first evidence of any valvular disease in this patient was in the mitral valve, and although the lesion here was not very progressive,

the fact that the apical systolic murmur came first constitutes very strong evidence that the initial valvular disease was of rheumatic origin. Finally, if we accept the signs at the base as indicating early aortic stenosis, we are forced to assume, in a man of this age, that there is rheumatic disease of the aortic valve. In older patients one sometimes has stenosis as a result of calcium deposition, even in the absence of antecedent rheumatic fever, but in a man this age rheumatic fever is practically the only cause of aortic stenosis. Syphilis, which is a common cause of aortic regurgitation, does not cause aortic stenosis. Hence, before we attempt to evaluate the significance of syphilis I think we have to conclude that this patient had rheumatic disease of his mitral valve, not far advanced, and rheumatic disease of his aortic valve at least moderately advanced.

To say that the main lesion of the heart valves is rheumatic is not to deny that syphilis may play a role. The two conditions may occur in the same heart and, indeed, I have twice in the past seen this at autopsy. Even though there was evidence of rheumatic heart disease prior to the acquisition of syphilis, there are several points which suggest that the patient may later have developed cardiovascular syphilis. Chief among these is the width of the aortic shadow in the x-ray. Granting that a widened aortic shadow does not necessarily mean syphilis, and that it may occur as a result of hypertension or arteriosclerosis, and that some widening may be observed in patients with rheumatic disease of the aortic valve, it still seems probable that an aortic shadow 9 cm. wide in a patient known to have syphilis indicates luetic aortitis. I am therefore going to make a diagnosis of syphilitic aortitis and will leave the question open as to whether syphilis involved the aortic valve too. I think the main lesion in the aortic valve was rheumatic, but if the man had syphilitic aortitis, it is probable that there was some syphilitic involvement of the aortic valve as well.

However, we still have something else to account for in regard to this patient's heart. He had clubbed fingers, and these appeared while he was under observation. Since at the earliest examination he did not have clubbed fingers, we can exclude the possibility that he was one of those rare individuals who happen to have this sign with-

out any pathological process to account for it or that congenital heart disease was the cause of the clubbed fingers. The patient had throughout his illness certain signs in his lungs which cannot be readily explained on the basis of congestion alone, and hence one might think that the pulmonary disease was the cause of the clubbed fingers. Against this is the fact that even after the clubbed fingers appeared cyanosis was quite slight. Usually, when a person has clubbing of the fingers as the result of chronic pulmonary disease, there is also well-marked cyanosis. Hence, I do not believe that the clubbed fingers can be explained on a pulmonary basis. Under exceptional circumstances patients with cirrhosis of the liver may develop clubbed fingers, but this patient had no evidence of such a disease. Occasionally one gets clubbing in an individual with an aneurysm. However, this man's syphilis was quite recent, and it seems very improbable that the disease had endured long enough to give him an aneurysm. Hence, by exclusion, we are forced to give serious consideration to that form of heart disease which commonly causes clubbed fingers in the absence of any striking cyanosis—namely, bacterial endocarditis. Certainly, the combination of rheumatic heart disease and clubbing of the fingers developing under observation suggests this diagnosis very strongly. On the other hand, the patient lacked some of the classical manifestations of bacterial endocarditis. No mention is made of fever and no petechiae or other embolic manifestations are described. Therefore, we have to conclude either that he did not have bacterial endocarditis, or that it existed in an inactive form. On the whole the latter conclusion seems to me to be more likely, and I am going to make a diagnosis of bacterial endocarditis in the healed or bacteria-free stage.

But this immediately raises another question. What about the kidneys? The patient had slight nitrogen retention (but not more than could be accounted for by congestive heart failure), and a little albumin in the urine. Neither of these findings is particularly significant in a person known to have heart failure. However, there is a close association between bacterial endocarditis and nephritis. Patients in the active stage of the disease, during which bacteria are present in the heart valves and can be recovered from the blood stream, commonly have the

so-called embolic nephritis, which might better be called "multiple glomerular embolization." Patients with healed bacterial endocarditis or individuals in the bacteria-free stage of the disease have an entirely different type of nephritis, which resembles the ordinary glomerular nephritis. This is such a common finding that the diagnosis of healed bacterial endocarditis almost automatically forces one to consider the probability of glomerular nephritis.

Shortly before death the patient developed fever and pain in his chest with signs which were interpreted as consolidation of the left lower lobe. Possibly he had a terminal acute pneumonia, but from the description I think it much more probable that this was an infarct of the lungs.

As regards the bloody stools which were passed in the last stage of the illness there are several possibilities, the most likely being that he had either a simple terminal colitis, such as one commonly sees in moribund patients, or mercurial colitis due to the diuretic drug. Since the former is such a common occurrence I think it the more likely condition.

In summary, then, I am inclined to believe that we are dealing here with three types of cardiovascular disease occurring in the same patient: chronic rheumatic heart disease affecting the mitral and aortic valves, a superimposed bacterial endocarditis which is healed, and syphilitic aortitis. In addition, I would expect the patient's organs to show an infarct in the lungs, chronic glomerular nephritis, and an acute terminal colitis.

Dr. Harrison's Diagnosis

Rheumatic heart disease affecting the mitral and aortic valves.

Healed bacterial endocarditis.

Syphilitic aortitis.

Pulmonary infarction.

Chronic glomerular nephritis.

Terminal colitis.

Anatomical Report

DR. ROBERT P. MOREHEAD: The heart was markedly enlarged and weighed 850 Gm. All chambers were involved in the process, but there was a disproportionate enlargement of the left ventricle. The mitral valve measured 9 cm. in diameter and was characterized by a diffuse and generalized thickening of the cusps; a few small nodular

vegetations were seen on the surface. The chordae tendineae were shortened and thickened. It was evident that the valve was both stenosed and incompetent. Microscopically there was marked fibrosis and perivascular round cell infiltration. The aortic valve was reduced to 6 cm. in diameter. The left cusp was almost completely destroyed and the posterior cusp showed marked thickening with rolling of the free edges. The right cusp was thickened and distorted and two distinct points of perforation were present. Immediately above the left cusp was a small pocketing of the aorta, and a similar pocket was seen on the opposite side above the right cusp. Stellate and longitudinal wrinkling of the vessel was evident. Microscopically the picture was that of fibrosis, necrosis, scarring, diffuse plasma cell infiltration and perivascular mononuclear infiltration.

It was evident from the gross and microscopic findings that this patient suffered from inactive rheumatic endocarditis, involving both mitral and aortic valves, resulting in mitral stenosis and insufficiency and aortic insufficiency. The gross and microscopic features of the aortic valve also suggested a healed bacterial endocarditis. There was also gross and microscopic evidence of syphilitic aortitis and valvulitis. A few vegetations were seen on the tricuspid valve, but the valve was normal in size and thickness.

The viscera displayed evidence of marked chronic passive congestion. The liver was markedly enlarged and presented a typical "nutmeg" appearance. The lung showed brown induration and fibrosis was fairly well marked. It is difficult to eliminate healed rheumatic interstitial fibrosis in this case and to attribute all of the fibrosis to chronic passive congestion. In the right lower lobe of the lung a large infarct was seen and a large adherent thrombus was found in the lower branch of the right pulmonary artery. The spleen was enlarged and engorged with blood, and the intestines showed vascular engorgement with extravasation of blood into the lumen of the bowel.

Other findings of interest were those of gastric and intestinal hemorrhages with minimal ulceration and secondary infection. The pancreas showed chronic interstitial inflammation and the kidneys were the seat of chronic glomerular nephritis.

This case is interesting in that it presents in a single patient the three principal types of valvular disease, and that all of the clinical data are readily explained from the pathological findings.

Anatomical Diagnosis

Rheumatic heart disease involving the mitral and aortic valves with minimal tricuspid involvement.

Healed bacterial endocarditis, aortic valve.

Syphilitic aortitis and valvulitis.

Chronic interstitial pneumonitis, rheumatic.

Pulmonary thrombosis and infarction.

Chronic glomerular nephritis.

Enteritis.

Chronic pancreatitis.

Chronic passive congestion of all viscera.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Insane Persons: In proper instances the clerk of court, with the approval of a Superior Court Judge, may order the purchase of a home for the use of certain dependents of incompetents, and may order proper advances made for support.

This is an account of a special proceeding heard before the Clerk of Superior Court of one of our eastern counties, he at the time acting in his judicial capacity. As is known, clerks of court are clothed with authority to try certain cases having to do with the estates of decedents, orphans' funds, estates of incompetents, and other matters of a similar nature. They have the usual duties in this respect which were formerly held by probate judges. In this particular instance the matter coming to the attention of the clerk of court was somewhat unusual in that the petitioner, who requested a sufficient amount of money from the estate of an incompetent person to purchase a house for her use and also a certain amount of money to be awarded her monthly for her support, was not the wife or a minor child of the incompetent. At the hearing the presiding judge of the Superior Court of the county sat with the clerk during this trial and heard the evidence and arguments of counsel, after which the judge approved the action of the clerk. The facts in this case as shown by the testimony are as follows: The petitioner was a sister of a World War Veteran who at the time of this trial was considered incurably insane and was a patient in a government hospital, where he was being cared for without charge. It was proved satisfactorily to the court that the veteran gave his sister all the assistance he could for her support before he was drafted and that he sent her money for this purpose after he was

in the army. Evidence also showed that he was unmarried and had no dependents. When the petitioner instituted this special proceeding the incompetent had in the hands of his guardian, a bank, the sum of \$2,246.81, representing payments on his War Risk Insurance. Testimony indicated that his sister was destitute and without means of support. After the evidence was in and the arguments of the counsel heard before the clerk and the aforementioned judge, the clerk ordered that the home be purchased for the petitioner and that the sum of \$20 monthly be allowed as a reasonable amount for her support. The following aspect of the case has no medicolegal significance, but it is perhaps of some general interest. The clerk ordered that for "valuable services" of attorneys the sum of \$625 be allowed for attorneys' fees. This judgment was appealed to the Supreme Court by the guardian, and the appellate court held as follows: "The clerk of court, with the approval of the resident or presiding judge, has the power upon the proper findings from the evidence to order the guardian to purchase a home in the name of the incompetent for the use of the petitioner and to advance the petitioner a reasonable sum monthly for her support. The attorneys' fees however, are not a part of the cost and may not be recovered by the successful litigant."

The basis for the above decision of the Supreme Court with reference to the award of a home and a certain amount of money for the petitioner's support is contained in a part of Section 2296, N. C. Code, and is as follows: "Whenever any non-sane person of full age, not being married and not having issue, be possessed or his guardian be possessed for him, of any estates, real or personal, or of an income which is more than amply sufficient to provide for such person, it shall be lawful for the Clerk of the Superior Court for the county in which such person resided prior to insanity to order from time to time, and so often as may be expedient, that fit and proper advancements be made, out of the surplus of such estate or income, to his parents, brothers, and sisters, or grandparents to whose support, prior to insanity, he contributed in whole or in part." The above, of course, has nothing whatsoever to do with the findings as to attorneys' fees, this being entirely incidental. (Vol. 216, p. 525, North Carolina Supreme Court. Decision rendered spring term, 1939.)

Cerebral Thrombosis.—In older persons who suddenly fail in health, one should think always of the possibility that there has been a small cerebral thrombosis. This is a common lesion which in my experience is seldom diagnosed until after the patient has had one or more typical strokes with involvement of arm or leg or speech center. In my youth I often watched these patients die by inches; I did not know what was the matter, and my colleagues did not seem to either. It was often thought the trouble was in the heart, but it was not. The patient often came in with what he called stomach trouble. Why? Because, suddenly, at a certain minute of a certain day there came a distress in the abdomen. Perhaps the patient was dizzy and vomited and for an hour or two was confused. The thing that always impresses me in these cases and makes the diagnosis for me is the suddenness of the onset. Highly diagnostic, also, when it is present, is the big change in the patient's character.—Walter C. Alvarez: What Is the Matter With the Patient Who Is Chronically Tired? J. Missouri State M. Assoc, 11:367 (November) 1941.

MILITARY MEDICINE

March 5, 1942.

Dear Dr. Johnson:

I have been designated as State Procurement Officer by Major Samuel F. Seeley, Executive Officer and Paul McNutt, Chairman of the Procurement and Assignment Service of the Defense Health and Welfare Services in Washington, D.C. The purpose is for the Procurement and Assignment of Physicians, Dentists, and Veterinarians.

Our Medical Committee has to deal with the Procurement and Assignment of Physicians. I have been asked to set up a Central Committee. The following is a list of those who have accepted this assignment:

Dr. Fred Patterson, Greensboro
Dr. E. J. Wannamaker, Charlotte
Dr. Roscoe McMillan, Red Springs
Dr. Carl V. Reynolds, Raleigh
Dr. W. D. James, Hamlet
Dr. Leslie Lee, Kinston
Dr. William Coppridge, Durham
Dr. R. P. Noble, Raleigh
Dr. Douglas Craig, Winston-Salem
Dr. Charles C. Orr, Asheville
Dr. J. R. McCracken, Waynesville
Dr. Webb Griffith, Asheville
Dr. Donnell Cobb, Goldsboro
Dr. James Robertson, Wilmington

Each County Society under Dr. Webb Griffith, President of the North Carolina Medical Society, is to set up a County Committee. The function of the whole group is to pass on the availability of any physician for service in the United States Army whose name is sent to the State Chairman and in turn sent to the member of the Central Committee in whose locality the physician resides and also to the County Committee.

I am enclosing a copy of a letter I received yesterday which is self explanatory and which you may publish in full if you so desire.

With best wishes, I am

Sincerely yours,

Hubert B. Haywood, M.D.

State Chairman

Procurement and Assignment Service

* * *

February 27, 1942.

Brigadier General Vivian Collins
State Director for Selective Service
State Arsenal
St. Augustine, Florida

Dear General Collins:

The following telegram from Major Sam F. Seeley, Executive Officer, Procurement and Assignment Service, Defense Health and Welfare Services, 601 Pennsylvania Avenue, Washington, D.C., received today:

"Urgently recommend you contact State Directors Selective Service System regarding the problem which the Procurement and Assignment Service is facing as a result of the classification by Local Boards of physicians, dentists and veterinarians in Class I-A with view of induction as enlisted men. Direct their attention to Selective Service System Memo 1-363 January 28, 1942, reproduced page 633 Journal American Medical Association February 21, 1942. Present strong representations that all physicians, dentists and veterinarians will be

enrolled with Procurement and Assignment Service within next few weeks and that overall needs of nation cannot be met unless all physicians, dentists, and veterinarians are retained in their professional capacities. Since we are responsible for the utilization of these individuals throughout the nation Local Boards should look to us for their assignment even if at present excessive in local areas; also at such time as those not willing to serve in professional capacities through the Procurement and Assignment Service are determined, they will be referred back to the Local Boards for final disposition."

It is urgently requested that you call attention of each Local Board in your State to this situation in order that the services of practitioners of medicine, dentistry, and veterinary medicine may be given the opportunity to practice the profession for which they are best qualified, either in a community requiring their services or as commissioned officers with the armed forces.

Each Local Board is respectfully requested to grant the necessary deferment of any physician, dentist or veterinarian in the above category who is necessary as a practitioner of his profession in a community or who desires service with the armed forces in order that he may have sufficient time to obtain a commission or placement through his enrollment with the Procurement and Assignment Service.

Yours very truly,

Edgar H. Greene, M.D.
Chairman, Committee for
Procurement and Assignment,
Fourth Corps Area

March 17, 1942.

Dear Dr. Johnson:

Governor J. M. Broughton has asked me to serve on the Salvage for Victory Campaign in North Carolina as a representative of the North Carolina Medical Society.

The North Carolina Medical Society and all hospitals are asked to participate in this campaign. We are asked to salvage paper, rags, rubber, and metals. There is a definite shortage and it is important to our war effort that we husband every resource. It is estimated that ten pounds of scrap metal will make twenty-five pounds of armament for our soldiers. Scrap metal is a necessary ingredient of steel. It is estimated that there are over eighty million pounds of scrap metal on the farms of North Carolina. The Japanese created a billion dollar a year industry in the Southeastern United States. Charitable organizations or individuals after collecting salvage materials may dispose of it to junk dealers. During the month of February twenty-eight million pounds of scrap metal was salvaged in North Carolina. The Government has a record of all old scrap cars in the "auto-graveyards" and can claim them at their own price at any time. There is at present a shortage of freight cars for hauling this metal. There are twenty-eight steel mills in the United States that are using this scrap metal.

It is estimated that in addition to the sugar shortage there will eventually be a shortage of glycerine. It is interesting to note that it takes 1/5 of an acre of sugar beets to produce enough of the ingredients of the explosive needed to fire a sixteen inch gun one time.

We of the Medical Profession are therefore asked to help salvage these materials for an American victory.

Very truly,
Hubert B. Haywood, M.D.
Member Salvage for Victory Campaign

FIRST AID FOR AIR RAID CASUALTIES

First aid measures applicable to the emergencies of war are embodied in a "Handbook of First Aid" issued by the Medical Division of the Office of Civilian Defense in cooperation with the American National Red Cross for the use of enrolled civilian defense workers.

The new handbook is of pocket size and has twelve chapters titled as follows: Advice to the Civilian Defense First Aid Workers; General Considerations; Care of Wounds; Dressings and Bandages; Hemorrhage; Burns, Shock (Collapse); Fractures; Artificial Respiration; Transportation of the Injured; Chemical Warfare; Miscellaneous Conditions. It will be seen from the titles that all material not relevant to the war emergency has been omitted from consideration. The book does not replace the standard Red Cross "Textbook of First Aid", which is to be used in first aid classes.

TEXTBOOK ON WAR GASES

"Protection Against Gas," a textbook on war gases to be used for instruction of public employees and volunteers enrolled in the various groups of the United States Citizens' Defense Corps, has been issued by the U. S. Office of Civilian Defense. The book was prepared by the War Department under the direction of the Chief of Chemical Warfare Service, U. S. Army, with suggestions of the National Technological Civil Protection Committee, a special advisory committee of engineers. The section on "First Aid Treatment of Gas Casualties" was prepared with the assistance of the Medical Division of OCD.

BULLETIN BOARD

SECRETARY'S MESSAGE

Eighty-Ninth Annual Session
Medical Society of the State of
North Carolina
Charlotte, N. C.

May 11, 12 and 13, 1942

Plans are rapidly shaping up, and, from all indications, we will have an outstanding meeting. Headquarters will be the Hotel Charlotte, a hotel with excellent accommodations. The following is a list of the hotels in Charlotte:

Hotel Charlotte:

Single Rooms—\$3.30 to \$5.50
Double Room (Double Bed)—\$4.50 to \$7.00
Double Room (Twin Beds)—\$5.00 to \$8.00

Barringer Hotel:

Single Rooms—\$3.25
Double Rooms (Twin Beds)—\$5.00

Selwyn Hotel:

Single Rooms—\$2.25 to \$3.00
Double Rooms (Twin Beds) with Bath—\$4.00 to \$5.00
Double Rooms (Twin Beds) without Bath—\$3.00
Single Room without Bath—\$1.75

Mecklenburg Hotel:

Single Rooms—\$1.75 to \$3.00
Double Rooms (Double Bed)—\$3.25 to \$4.00
Double Rooms (Twin Beds)—\$4.00

Mayfair Hotel:

Single Rooms—\$2.00 and \$3.50
Double Rooms—\$3.00 to \$4.50

I suggest that you make your reservations as early as possible, for I have been from one end of the state to the other attending various meetings and have good reason to believe that there will be a record attendance and that hotel accommodations will be at a premium. Requests for reservations should be addressed to the management of the hotel of your choice or to Dr. Harry Winkler, 121 West Seventh Street, Charlotte, who is Chairman of the Hotel Committee.

Naturally, the theme of this meeting will be centered around the war, but I promise you three full days of fellowship, frivolity and fun as well as an opportunity to increase your store of professional knowledge and to learn just what may be expected of you as your professional contribution toward the winning of the war. Let us take full advantage of this meeting. Come early and stay with us for "Auld Lang Syne". There will be enjoyable social features, strong professional stimuli, and a demonstration that we subscribe to the motto "E Pluribus Unum" professionally as well as nationally. Bring your colleagues from your county society and let us see if we can arouse some good-natured rivalry in winning the honor of having the best attendance (percentage) among the component county societies.

As for our Exhibits, all available space has been taken for Commercial Exhibits, and our Scientific Exhibits are far above the average. For instance, Major O. C. Paciulli, Commanding Officer, Ninth Medical Battalion, Fort Bragg, will have an exhibit showing how 400 casualties may be taken care of at once in a Field Hospital. This, in itself, will be well worth the trip to Charlotte. The Scientific Exhibits will fill the largest space we have ever had for such exhibits.

The House of Delegates will convene at 2 p.m. on Monday, May 11, in the Ball Room of the Hotel Charlotte.

At 7:30 a.m., Tuesday, May 12, at the Hotel Charlotte, we are initiating an innovation, a Breakfast for the Presidents and Secretaries of the component county medical societies. This is being instituted in the hope of stimulating a fuller relationship between the officers of the State Society and those of

the county societies. We have planned a very interesting and instructive program. There will be three or four speakers, who will each talk for only a few minutes. Their talks will be followed by a round-table discussion of the various problems encountered by the officers present. I urge each President and each Secretary of a county medical society to back me up in this venture by being present with his problems and his ideas. As a result of this meeting together I hope that each of us will be able to carry home an inspiration to work more closely together because of a better understanding with one another.

At the General Session on Tuesday morning, May 12, Dr. Fred Rankin, President-Elect of the American Medical Association, who is now in the office of the Surgeon General in Washington, will talk to us on "The Medical Profession and Mobilization". Another headliner for the First General Session will be Brigadier-General H. C. Curn, Commanding Medical Officer at Fort Bragg, who will talk on "The Responsibilities of the Civilian Physician in the War Emergency".

Tuesday at noon there will be Alumni Luncheons, followed in the afternoon by various sectional meetings. The chairmen of these sections have completed their programs and each has done very fine work in securing outstanding speakers.

Tuesday evening will be "President's Night". The President's Dinner, to be held at 7 o'clock in the Ball Room of the Hotel Charlotte with Dr. Oren Moore as Toastmaster, is an event you must not miss. Incidentally, for this occasion, you may leave all your trials, troubles and tribulations in your rooms, for we have secured an extraordinarily inspirational and humorous speaker, Mr. James E. Gheen of New York City, who will be the only speaker of the evening. As a philosophical humorist, he has no peer on the public platform. At 10 o'clock the President's Ball will begin. Bring along your dancing shoes so that you may fully enjoy this feature of our entertainment.

On Wednesday morning, May 13, the Second General Session will begin in the Ball Room promptly at 9 o'clock. When I tell you that Dr. Paul Dudley White will be the guest speaker, enough is said. In addition to this attraction, your program is brim-full of well worth while talks by outstanding North Carolina physicians. We

will begin on time and end on time and WOE unto the fellow who oversteps his limit! This program is being timed to the minute.

Other Alumni Luncheons will be held on Wednesday at noon, and the sectional meetings which will follow in the afternoon are far above par.

The program for the Woman's Auxiliary, under the presidency of Mrs. Sidney Smith of Raleigh, will begin at 1:30 p.m. on Monday, May 11, with a Luncheon for the Executive Committee and the Board of Directors, courtesy of Mrs. Smith, at the Hotel Charlotte. From then on there is something to be done every minute. On Tuesday, Mrs. Roscoe E. Mosiman of Seattle, Washington, President of the Woman's Auxiliary to the American Medical Association, will be the guest speaker.

There will be a visit to the Mint Museum of Art, followed by a Coffee Hour at the home of Mrs. J. A. Elliott. A visit to the beautiful gardens of Charlotte will be followed by Tea at the home of Mrs. E. J. Wannamaker, wife of the President of the Mecklenburg County Medical Society. There will be various other attractions which the ladies of the Charlotte Auxiliary have arranged.

The North Carolina Public Health Association, which heretofore has held its meeting on Monday preceding the meeting of the Medical Society, this year will have two full days beginning Thursday morning, May 14, with a General Session, the program for which should be both interesting and instructive. There will be another interesting General Session in the afternoon. Mr. Edwin Gill of Raleigh, North Carolina Commissioner of Paroles, will speak on the subject "Diseases and Crime" at the Annual Dinner to be held at Hotel Charlotte on Thursday evening, May 14.

The Sectional Meetings of the Public Health Association on Friday, May 15—the Health Officers' Section, the Nurses' Section and the Sanitarians' Section—will make up a full day.

The multitudinous details necessary for the preparation and arrangements for the State Meeting have largely been attended to by the different committees of the Mecklenburg County Medical Society, headed by Dr. Joseph A. Elliott as General Chairman, and much of the success and smoothness of this work is creditable to the prideful contribu-

tions in effort and plans of the Mecklenburg County Society as a whole.

Remember to be in Charlotte on May 11, 12 and 13.

* * *

Since the above was set in type, it has been necessary to rearrange Wednesday's program because of conflicting engagements of Dr. Paul Dudley White. Dr. White is scheduled to address the New Hampshire Medical Society at Manchester on Tuesday. The New Hampshire Society has rearranged its program so that he may come to Charlotte. In order to secure Dr. White we think it well worth while to rearrange our program. Therefore, instead of the second General Session's being held on Wednesday morning, as has been the case in the past, it will be held on Wednesday afternoon in the ball room of the Hotel Charlotte, and the section meetings heretofore scheduled for Wednesday afternoon will be held on Wednesday morning.

NEWS NOTES FROM DUKE HOSPITAL

In order to cooperate with the accelerated medical school program, the Duke Hospital internships of twelve months in the various services will commence on July 1, 1942, April 1, 1943, January 1, 1944, October 1, 1944, and July 1, 1945. This schedule will provide an overlapping in internships for a period of three months, during which the preceding group will be senior interns. Applications should be sent to the Superintendent six months before these dates.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Mr. Charles Dollard, Assistant to the President of the Carnegie Corporation of New York, visited the school on March 20, 1942.

Dr. C. Nash Herndon has returned to the school from the University of Michigan to resume his activities in the Department of Medical Genetics. Dr. Herndon was Research Associate in the Department of Human Heredity of the University of Michigan while on leave from this medical school.

Dr. Camillo Artom, Dr. W. H. Fishman and Miss Marjorie Swanson of the Department of Biochemistry, Dr. Herbert S. Wells and Dr. J. Maxwell Little of the Department of Physiology and Pharmacology, and Dr. Arthur Grollman, Research Professor of Medicine, attended the meeting of the American Federation of Biological Sciences held in Boston.

Dr. Roland E. Müller, Assistant Professor of Anatomy, attended the meeting of the American Association of Anatomists held in New York City.

Dr. Howard H. Bradshaw, Professor of Surgery, will give a series of ten lectures on the treatment of chest wounds to the local physicians in Winston-Salem who anticipate going into the service. These lectures begin on April 1.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. William deB. MacNider attended a meeting of the American Division of the Club for Research on Ageing in Baltimore February 28 to March 1. At this meeting Dr. MacNider was reelected Chairman of the American Division of the International Club for Research on Ageing.

* * *

Dr. Milton J. Rosenau and Dr. Harold W. Brown, of the faculty of the School of Public Health, attended the meetings of the American Epidemiological Society and the Association of Schools of Public Health in Baltimore on March 20 and 21, and the meetings of the State and Provincial Health Authorities with the Surgeon General of the U. S. Public Health Service in Washington on March 22, 23, and 24. Dr. H. G. Baity, of the faculty of the School of Public Health, also attended the meetings of the State and Provincial Health Authorities in Washington.

* * *

Dr. William L. Fleming, of the faculty of the School of Public Health, was in Washington on March 23 and 24 to attend a meeting with the National Research Council.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Dr. Carl V. Reynolds, North Carolina State Health Officer, was elected President of the State, Territorial and Provincial Health Authorities of North America, at the annual meeting of that organization held in Washington.

Dr. Reynolds succeeds Dr. Frederick W. Jackson, Deputy Minister of Health at Winnipeg, Manitoba, who served as president during the past year.

Other officers elected were: Vice-president, Dr. Gregoire F. Amyott, Provincial Health Officer, Victoria, British Columbia; secretary and treasurer, Dr. Albert J. Chesley, State Health Officer of Minnesota, who was reelected for his eighteenth term.

New members elected to serve on the executive committee were: Dr. Edwin S. Godfrey, Jr., State Health Officer for New York; Dr. Carter W. Williams, State Health Officer for Tennessee, and Dr. Donald G. Evans, Health Officer for the State of Washington.

A new organization was formed, composed of State and territorial health officers of the United States and its possessions, to act as a clearinghouse on matters of federal import relating to the various States and territories.

The work of this organization, said Dr. Reynolds, who was president pro tem, is to review health problems of an interstate nature and to coordinate the interests of all concerned.

* * *

Of the 446 babies under a year old who died in North Carolina during February, 18 smothered to death while sleeping with parents, according to reports made to the State Board of Health. About 75 such deaths occur in the State annually, most of them in wintertime.

February deaths from influenza totaled only 48, as compared with 291 the corresponding month in 1941, while pneumonia deaths for the month dropped from 322 to 231. Measles claimed 11 victims, against 2 in February last year. From January 1 through March 14, 1942, there were 10,865 cases of measles reported in North Carolina, against 3,243 during the corresponding period of last year and 1,070 in 1940. The disease, on the up-surge this year, is scattered throughout the state.

Suicides are temporarily on the decrease, there having been only 15 reported last month, against 25 in February, 1941, while homicides for the month totaled 24. There were 28 reported in February last year.

Reports for the year through February show that an average of 235 babies were born in the State each day, while daily deaths averaged 89.

NORTH CAROLINA NEUROLOGIC AND PSYCHIATRIC ASSOCIATION

The North Carolina Neurologic and Psychiatric Association met in Charlotte on March 27. Dr. B. J. Alpers, Professor of Neurology at Jefferson Medical College, was the guest speaker for the dinner meeting. His subject was "The Structural Basis of Psychiatry". Others appearing on the program were Drs. Paul Kimmelstiel, Archie A. Barron, W. B. Mayer, and D. G. Welton of Charlotte; Drs. Robert Graves, Ignacio Matte, and Maurice H. Greenhill of Durham; Dr. Fred Taylor of High Point; Dr. James Watson of Raleigh; Dr. Willard Cardwell of Greensboro; and Dr. J. A. Rose of Winston-Salem. Officers for the past year were Dr. Archie A. Barron of Charlotte, President; Dr. F. B. Watkins of Morganton, Vice-President; and Dr. Burke Suitt of Durham, Secretary and Treasurer.

CANCER CONTROL INSTITUTE

The Woman's Field Army of the American Society for the Control of Cancer held a Cancer Control Institute in Winston-Salem on March 24, Mrs. George E. Marshall, State Commander, presiding. Physicians appearing on the program of the dinner meeting were Dr. H. B. Ivey, Chairman of the State Executive Committee; Dr. Ivan M. Proctor, Educational Director; Dr. F. Webb Griffith; and Dr. C. C. Carpenter, Dean of the Bowman Gray School of Medicine of Wake Forest College.

April is national cancer control month.

BUNCOMBE COUNTY MEDICAL SOCIETY

Dr. Charles Henry Armentrout addressed the Buncombe County Medical Society on March 16. His subject was "Potassium Thiocyanate in the Treatment of Hypertension".

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society held a dinner meeting in Winston-Salem on March 10. Dr. Barnes Woodhall of Duke University School of Medicine spoke on "Rupture of Intervertebral Discs".

HAYWOOD COUNTY MEDICAL SOCIETY

The March meeting of the Haywood County Medical Society was held in the Haywood County Hospital on March 19. Dr. Dudley Smith of Waynesville gave a talk on his experiences with the American Hospital in Britain, where he has served during the past year. The dentists and nurses were invited to attend this meeting.

AMERICAN COLLEGE OF PHYSICIANS

The Twenty-Sixth Annual Session of the American College of Physicians will be held in St. Paul, Minnesota, April 20-24. Dr. William deB. MacNider of the University of North Carolina School of Medicine will deliver the Convocational Address at the Annual Convocation to be held Wednesday evening, April 22. His subject will be "A Consideration of the Factor of Change in the Animal Organism". Others appearing on the program from North Carolina are Dr. Verne S. Caviness, Dr. Thomas L. Umphlet, and Dr. Chauncey L. Royster of Raleigh, who will give a paper on "Blood Pressure and Sulfo-cyanates"; and Dr. C. H. Cocke of Asheville, who will hold a clinic on "Pulmonary Conditions: Atelectasis and Spontaneous Pneumothorax".

PLANNED PARENTHOOD FEDERATION OF AMERICA

Dr. Claude C. Pierce, until March 1st a Medical Director of U. S. Public Health in charge of District No. 1, will assume active duties as National Medical Director of the Planned Parenthood Federation of America, Inc., it was announced by Richard N. Pierson, President of the organization, which was formerly the Birth Control Federation of America, Inc.

NEWS NOTES

Dr. W. R. Pitts and Dr. William Francis Martin of Charlotte have recently been certified by the American Board of Surgery.

* * *

Dr. Robert T. Odom has opened offices in the Nissen Building Winston-Salem, for the practice of surgery.

* * *

Dr. Thomas W. Baker of Charlotte was married to Miss Margaret Lunsford in Durham on March 29.

The Japanese death rate is 17.4 per 1000 as compared to 10 or 11 in the United States. Japan's present death rate, in fact, resembles ours of 1900. Individual causes of death in Japan are about as prevalent now as in this country about 1900. For example, the United States tuberculosis death rate now is 45 per 100,000. In Japan in 1937 the rate was 204, closely resembling our tuberculosis death rate in 1900 of 196. The picture is similar for diarrhea and enteritis. America has more than twice as many men to draw on in the military age group as Japan—25 million men from 20 to 34, as against Japan's 11 million in this age group. Science News-Letter, January 17, 1942.

One small straw that points a dreadful wind. During the first two years of the war (England) deaths from tuberculosis increased in Glasgow about 41 per cent. The 1941 record shows no improvement. Overwork, strain, ill-spent leisure are thought to be responsible for the rise. S. Laidlaw, M.D. and D. MacFarlane, M.D. British Med. Jour., September, 1941.

See the Borden Exhibit at the Charlotte Meeting

Borden's scientifically designed infant foods at Booth No. 6: BIOLAC, NEW IMPROVED DRYCO (quicker solubility and more vitamins A and D), MULL-SOY (for infants allergic to milk), BETA LACTOSE, KLIM, MERRELL-SOULE POWDERED MILKS and BORDEN'S SILVER COW IRRADIATED EVAPORATED MILK.

AUXILIARY

AUXILIARY PLANS FOR STATE CONVENTION

To Charlotte doctors' wives, in this year of 1942, has come "the good privilege" of entertaining the Auxiliary to the Medical Society of the State of North Carolina.

Thoughts of this privilege have brought new life to the Auxiliary of the Mecklenburg County Medical Society, which, at this date, shows in its records proof of three interesting, well-attended luncheon meetings held this winter.

This Auxiliary, and the wives of all Mecklenburg County doctors, now extend to each and every member of the Auxiliary to the State Medical Society heartiest greetings and a most cordial invitation to attend the Twentieth Annual Session of the Auxiliary to the State Medical Society, May 11, 12, and 13.

We breathe and feel every minute the weight of the war clouds, but, even more *because of*, rather than *in spite of* this, do we press our invitation upon you and hope you will accept.

A former president of the Auxiliary to the American Medical Association said that we must "keep reasons and objectives for our organization constantly before us. One of our greatest services is to participate in Public Health Work." The chief aim of the Auxiliary for all time, and for this year, particularly, is the betterment of the health standards and of the actual health of men, women, and children of our land—and there is no better way in which we can serve our country than to follow this aim. The successful outcome of the war for the Allies depends greatly on the health of the men we send to the front and the health of the rest of us, who keep the home fires burning. This getting together, in convention, will prove, we believe, an inspiration that will go far toward keeping this aim before us, preparing us for, and carrying us through, trying times that may come. Won't you come to Charlotte and partake of the hospitality so gladly offered? Let us, wives of doctors, with so many like interests, spend together a season of fellowship, cementing old friendships and making new friends. A warm welcome awaits you.

Tentative plans for the Convention days, May 11-13, follow:

Members of the Hospitality Committee will be in the lobby of the Charlotte Hotel to greet, and give information to in-coming guests.

Rules and Procedure

1. Register on arrival. Present 1941-1942 membership card or pay \$1.00 registration fee, and receive badge.
2. Wear badge to all functions.
3. Please register promptly for various events.
4. Visiting ladies are asked to use their own cars if convenient.

Auxiliary General Chairman of Convention

Mrs. Henry L. Sloan

Convention Committees

Hospitality: Mrs. Joseph Elliot, Chairman; Mrs. Aubrey Hawes, Mrs. O. D. Baxter, Mrs. Robert H. Lafferty, Mrs. Brodie Nalle, Mrs. Luther Kelly, Mrs. Andrew Blair, Mrs. R. B. McKnight, Mrs. Wm. Allan, Mrs. W. S. Rankin, Mrs. Vann Matthews.

Bingo Party: Mrs. Graham Reid, Chairman; Mrs. James Alexander, Mrs. L. R. Teasdale, Mrs. Robert T. Ferguson, Mrs. L. C. Todd, Mrs. Jasper S. Hunt, Mrs. W. B. Bradford, Mrs. W. Z. Bradford, Mrs. W. T. Gilmore.

Luncheon: Mrs. Raymond Thompson, Chairman; Mrs. Alonzo Myers, Mrs. Addison Brenizer, Mrs. L.D. McPhail, Mrs. Robert McKay, Mrs. C. L. Nance, Mrs. C. C. Massey, Mrs. Heath Nisbet, Mrs. G. H. Petteway.

Tea: Mrs. Ed Wannamaker, Chairman; Mrs. O. L. Miller, Mrs. E. W. Franklin, Mrs. W. E. Daniel, Mrs. Paul W. Sanger, Mrs. W. R. Pitts, Mrs. A. A. Barron, Mrs. Hamilton McKay, Mrs. Elias Faison, Mrs. Preston Nowlin, Mrs. Allan Tuggle.

Transportation: Mrs. Harry Winkler, Chairman; Mrs. V. K. Hart, Mrs. John Stuart Gaul, Mrs. A. B. Choate, Mrs. Frank C. Smith, Mrs. Chas. H. Gay, Mrs. John P. Kennedy, Mrs.

Chas. W. Robinson, Mrs.
Claude B. Squires, Mrs. Fred
E. Motley, Mrs. D. G. Welton,
Mrs. J. Rush Shull, Mrs. Mar-
vin Scruggs, Mrs. Wm. F.
Martin, Mrs. J. B. Hamer,
Mrs. E. R. Hipp, Mrs. Preston
White, Mrs. Hunter Jones,
Mrs. L. B. Newell, Mrs. C. N.
Peeler, Mrs. J. Lester Ranson,
Mrs. R. A. Moore, Mrs. H. L.
Newton.

Mint Museum: Mrs. W. B. Mayer, Chair-
man; Mrs. J. W. Gibbon.

AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Twentieth Session OFFICERS

President—Mrs. Sidney Smith.....Raleigh
President-Elect—Mrs. R. A. Moore.....Winston-Salem
First Vice-President—Mrs. C. R. Hedrick.....Lenoir
Second Vice-President—Mrs. J. R. Terry.....Lexington
Third Vice-President—Mrs. J. S. Hooker.....Chapel Hill
Chairman of Past Presidents—Mrs. P. P. McCain
Sanatorium
Corresponding Secretary—Mrs. J. C. Knox.....Raleigh
Recording Secretary—Mrs. Harry Winkler
Charlotte
Treasurer—Mrs. E. C. Judd.....Raleigh

COUNCILORS

First District—Mrs. Thomas L. Carter.....Gatesville
Second District—Mrs. K. B. Pace.....Greenville
Third District—Mrs. D. M. Royal.....Salem
Fourth District—Mrs. C. F. Strosnider.....Goldsboro
Fifth District—Mrs. W. T. Rainey.....Fayetteville
Sixth District—Mrs. P. G. Fox.....Raleigh
Seventh District—Mrs. G. Aubrey Hawes.....Charlotte
Eighth District—Mrs. E. T. Harrison.....High Point
Ninth District—Mrs. James W. Vernon.....Morganton
Tenth District—Mrs. D. I. Campbell King
Hendersonville

STANDING COMMITTEES

Program—Mrs. Joseph A. Elliott.....Charlotte
Public Relations—Mrs. Wingate Johnson
Winston-Salem
Legislative—Mrs. J. Buren Sidbury.....Wilmington
Press and Publicity—Mrs. Verne S. Caviness
Raleigh
Bulletin—Mrs. Ben Kendall.....Shelby
Hygeia—Mrs. W. G. Byerly.....Lenoir
Memorial—Mrs. George W. Mitchell.....Wilson
Historian—Mrs. J. Roy Hege.....Winston-Salem
Exhibits—Mrs. Alfred A. Kent, Jr.....Granite Falls
Research—Mrs. Rigdon Dees.....Greensboro
Scrapbook—Mrs. Ben F. Royal.....Morehead City
Jane Todd Crawford Memorial—Mrs. F. R. Taylor
High Point
National Defense—Mrs. Thomas Leslie Lee Kinston
Auditor—Mrs. R. S. McGeachy.....New Bern
Nominations—Mrs. George M. Cooper.....Raleigh
Convention—Mrs. Henry L. Sloan.....Charlotte
Advisory Board—Dr. Caroline McNairy.....Lenoir
Councilor to Southern Medical Auxiliary
—Mrs. J. B. Sidbury

PROGRAM

AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Headquarters: Hotel Charlotte

MONDAY, MAY 11

1-6 p.m.—Registration.....Hotel Charlotte
1:30 p.m.—Luncheon meeting for Execu-
tive Committee and Board of
Directors, Hotel Charlotte,
courtesy Mrs. Sidney Smith,
Raleigh, State President.
8:30 p.m.—Bingo Party.....Hotel Charlotte

TUESDAY, MAY 12

9 a.m. —Executive Board Meeting,
Chinese Room, Hotel Charlotte.
10:30 a.m.—Annual State Meeting—Char-
lotte Woman's Club.
*1 p.m. —Luncheon—Charlotte Woman's
Club (Fee \$.75)
Mrs. Roscoe E. Mosiman of
Seattle, Washington, Presi-
dent of Woman's Auxiliary
to American Medical Asso-
ciation, Guest Speaker.
*2:30 p.m.—Garden Pilgrimage followed
by tea at the home of Mrs. E.
J. Wannamaker, 1134 Linga-
nore Place.
7 p.m. —Joint banquet with Medical
Society.
10 p.m. —Annual Medical Society Ball.

WEDNESDAY, MAY 13

9 a.m. —Post-Convention Executive
Board Meeting — Mrs. R. A.
Moore, Presiding — Chinese
Room.
*10 a.m. —Visit to Mint Museum of Art.
Coffee hour at the home of
Mrs. Joseph A. Elliott, 2700
Sherwood Avenue.

* Please register for these events.

PROGRAM

ANNUAL STATE MEETING

Tuesday, May 12, 1942, 10:30 A. M.
Charlotte Woman's Club

Mrs. Sidney Smith, President, Presiding

Call to Order, Mrs. Sidney Smith.....Raleigh
Invocation, Mrs. George W. Mitchell.....Wilson
Memorial Service

Reports of Officers:

President, Mrs. Smith

First Vice-President and State Chairman of Or-
ganization—Mrs. Clyde R. Hedrick.....Lenoir

Introduction of District Councilors

Second Vice-President and Chairman of McCain
Stevens Beds—Mrs. J. R. Terry.....Lexington

Third Vice-President and Chairman Student Loan Fund—Mrs. John S. Hooker.....Chapel Hill
 Treasurer, Mrs. E. C. Judd.....Raleigh
 Announcement of Awards
 Chairman of Past Presidents, Mrs. P. P. McCain
 Sanatorium
 Chairman Advisory Board, Dr. Caroline McNairy
 Lenoir
 Recommendations of Board of Directors
 Recording Secretary—Mrs. Harry Winkler.
 Charlotte
 Introduction of Chairmen of Standing Committees
 Introduction of Presidents of County Medical
 Auxiliaries
 Reports:
 Councilor for Southern Medical Auxiliary
 Chairman of Revisions, Mrs. J. Buren Sidbury
 Wilmington
 Delegate to National Auxiliary
 —Mrs. Harry Winkler, Charlotte
 Courtesy Committee
 Greetings from the Medical Society of the State of
 North Carolina—Dr. F. Webb, Griffith, President
 Asheville
 Unfinished Business
 New Business
 Report of Nominating Committee
 —Mrs. G. M. Cooper, Chairman, Raleigh
 Election and Installation of Officers
 —Mrs. P. P. McCain, Presiding
 Inaugural Remarks—Mrs. R. A. Moore
 Winston-Salem
 Announcements
 Adjournment
 Luncheon

VISIT OF NATIONAL PRESIDENT

Mrs. Roscoe E. Mosiman of Seattle, Washington, President of the Auxiliary to the American Medical Association, has signified her intention of attending the annual State meeting of the North Carolina Auxiliary at the invitation of the State Board of Directors. Since conditions are extremely unsettled on the West Coast it is not possible for Mrs. Mosiman to say definitely that she will be able to travel across the United States for this meeting. However, she has graciously responded to North Carolina's invitation and writes: "Nothing would give me greater pleasure than attending your meeting. I have looked forward to being with you . . . and I hope to be able to attend your luncheon meeting of May 12 and discuss some of the problems which confront us."

The State Auxiliary will have its annual session on Tuesday morning, May 12, at 10:30 o'clock at the Charlotte Woman's Club. Officers will attempt to make the meeting brief and informative. A luncheon will follow, at which time Mrs. Mosiman will be guest speaker.

MRS. HOLCOMBE IS GUEST OF WAKE COUNTY AUXILIARY

The Auxiliary to the Wake County Medical Society was honored to have as its guest speaker in March, Mrs. V. E. Holcombe of Charleston, West Virginia, immediate past president of the National Auxiliary. The meeting was held at the Woman's Club in Zebulon with Mrs. A. C. Campbell, of Raleigh, president of the Wake County Auxiliary, presiding.

During her visit in North Carolina, Mrs. Holcombe was the guest of Mrs. Sidney Smith, State Auxiliary President, at her home in Raleigh. Mrs. Holcombe is this year devoting her time to civilian defense work. She is Chairman of Volunteer Service for the Charleston Chapter of the American Red Cross and is particularly interested in the work of the Nurses' Aide Corps of the Red Cross, having organized a series of successful classes in Charleston hospitals this winter. While in Raleigh Mrs. Holcombe addressed a student group preparing to become Nurses' Aides at Rex Hospital and was presented in a radio broadcast over WPTF, speaking in behalf of this branch of Red Cross volunteer service.

ANNOUNCEMENT

A few more months, and the members of the Woman's Auxiliary to the American Medical Association will be arriving in Atlantic City, New Jersey, for their Annual Convention, June 8-12.

Have you made your reservations? If not, send your request *at once* to Haddon Hall, Atlantic City, New Jersey.

Tuberculosis occupies one of the first places in the disorganization of family life, both socially and economically. It breaks up homes, separates families, destroys husband-wife and parent-child relationships; and it renders many of its victims incapable of resuming their places in society. Economically the cost of this disease to the community is tremendous. It costs a community from \$2,000 to \$5,000 to care for each case of diagnosed tuberculosis, depending upon the stage of advancement. It has its highest incidence during the most productive years of life, and the financial loss to the patient and to the country as a whole amounts to millions of dollars annually. From an epidemiological standpoint, the disease has the greatest incidence of any disease, with the possible exception of gonorrhea and syphilis.—Grace M. Longhurst, R. N., Amer. Jour. of Nursing, Jan. 1942.

BOOK REVIEWS

Clinical Hematology. By Maxwell M. Wintrobe, M.D., Ph.D., Associate in Medicine, Johns Hopkins University; Associate Physician, Johns Hopkins Hospital. 792 pages, with 167 engravings and 7 colored plates. Price, \$10.00. Philadelphia: Lea & Febiger, 1942.

Our knowledge of hematology has been so widened in recent years that the subject is one of great complexity. Dr. Wintrobe, one of the assiduous workers in the field, presents in this book a comprehensive and authoritative survey of the subject. The efficacious management of any patient presenting evidence of a hematological disorder requires an accurate diagnosis. The laboratory methods necessary for arriving at such a diagnosis are explicitly described, and detailed clinical accounts of the various hematological disorders and the means available for their management are given. The book is well organized and clearly written. Bibliographic references to 2400 papers and monographs are included.

Diseases of Metabolism. Edited by Garfield G. Duncan, M.D., Chief of Medical Service "B", Pennsylvania Hospital; Associate Professor of Medicine, Jefferson Medical College, Philadelphia, Penn. 985 pages. Fully illustrated including 7 color plates. Price \$12.00. Philadelphia: W. B. Saunders Company, 1942.

The material on the different phases of metabolism has been compiled by fifteen different authors. The chapters on certain major metabolic problems such as obesity and diabetes are excellently written from the standpoint of the practicing physician. The discussion on gout consumes forty-one pages, which seems unduly lengthy. Diseases of the thyroid are not discussed in a separate chapter but are covered under introductory considerations and under iodine metabolism, a total of thirty-three pages being devoted to this important subject. Many of the sections such as that on protein metabolism, cover much of the experimental work on the subject, with discussions of the structural formulae. The bibliography is well selected. On the whole the volume well fills its intended function as a text for practitioners.

Diabetes Mellitus. By Zolton T. Wirtschafter, M.D., Clinician in Charge, Clinic for Diabetes, Department of Medicine, Mount Sinai Hospital, Cleveland; Visiting Physician, Department of Medicine, Cleveland City Hospital; Clinical Instructor in Medicine, School of Medicine, Western Reserve University; and Morton Korenberg, M.D., Former Fellow, May Institute of Medical Research, The Jewish Hospital, Cincinnati; Medical Resident, Jewish General Hospital, Montreal. 185 pages. Cloth, \$2.50. Baltimore: The Williams and Wilkins Company, 1942.

A large part of the book is a compilation of one sentence summaries of articles in the literature covering all phases of diabetes. There is little original work included. This volume might prove helpful to students but would be of little value to the practicing physician. The bibliography and format are excellent.

The Blood Bank and the Technique and Therapeutics of Transfusions. By Robert A. Kilduffe, Director, Laboratories, Atlantic City Hospital; and Michael DeBakey, Assistant Professor of Surgery, School of Medicine, Tulane University of Louisiana. Price, \$7.50. St. Louis: The C. V. Mosby Company, 1942.

The authors have successfully attempted in this book to collect together in a comprehensive manner a vast amount of material concerning blood and plasma transfusions, the technical methods used and the indications and contraindications for the administration of blood serum and plasma. The book begins with a historical chapter, which is followed by a chapter on the indications and contraindications. The greater part of the book has to do with the technique of blood typing, with compatibility tests, the blood and plasma bank, the preparation of dried plasma, and methods and technique of transfusions. Each chapter is supported by a voluminous bibliography which covers all the literature through July, 1941. It is an excellent book and ought to find wide usefulness both in laboratories and hospitals and among the medical profession generally.

Symposium on Military Medicine. The Medical Clinics of North America, Vol. 25. Illustrated. Cloth, \$12.00 per clinic year, paper, \$6.00 per clinic year. Philadelphia: W. B. Saunders Company, 1941.

This volume is composed of a number of short individual articles on various phases of disease in relation to the peculiar problems of military medicine. Many of the authors are in the regular armed forces, and the remainder are in the organized reserve. The material should prove especially interesting to those physicians who are unfamiliar with the organization of the medical departments of the armed forces. It is not in any sense a hand-book to be taken into the field.

Infantile Paralysis, 1941. A Symposium. 239 pages, with illustrations. Price, \$1.25. New York: The National Foundation for Infantile Paralysis, Inc., 1941.

This book is composed of a series of six lectures given at Vanderbilt University by Drs. Paul F. Clark, Charles Armstrong, Thomas M. Rivers, Ernest W. Goodpasture, John R. Paul, and Frank R. Ober. Each is an accepted authority in his particular field. The lectures deal with the history of poliomyelitis; the etiology; immunological and serological phenomena; pathology and pathogenesis; epidemiology; and treatment. A comprehensive bibliography is included.

The purpose of these lectures is "to bring together a resume of the present day knowledge of this disease" so that those interested may learn what is known about it, what false leads have been followed in investigations concerning it, and what promising studies should be carried further. This purpose has been fulfilled, and the book should be of value to anyone interested in poliomyelitis, whether from a clinical or a research viewpoint.

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CESAREAN SECTION

A Review of Three Hundred and Sixteen Cases*

JAMES P. HENNESSY, M.D., F.A.C.S.

NEW YORK CITY

Three hundred and sixteen cesarean sections were performed in St. Ann's Maternity Hospital during the thirteen years from 1928 to 1941 inclusive. Prior to 1928 case histories were incomplete and are therefore useless for our study. The total number of deliveries during this period was 9,149, and the incidence of cesarean sections was 3.44 per cent. Of the total number, 4,605 were ward patients and 4,544 were private patients. The incidence of cesarean section was consistently higher in the private cases (1:23) than in the ward group (1:39) (table 1).

St. Ann's service is composed of approximately equal numbers of private and service cases. Until the last two years there were more private patients than service cases, and the incidence of cesarean sections was

greater than it now is. This fact is explained by the presence of referred cases with histories of previous cesarean section and previous difficult delivery, with loss of the baby.

The 316 cesarean sections in this series were performed by seventeen members of the staff. Seven members of the attending staff operated on 285 cases (90 per cent), and ten members of the courtesy staff operated on 31 cases (10 per cent).

Indications

The various indications for the cesarean sections are listed in table 2. Many patients

TABLE 1
Incidence of Cesarean Section in Ward and Private Cases

Yr.	Total Deliveries			Cesarean Sections			Incidence of Cesarean Sections		
	Total	Ward	Priv.	Total	Ward	Priv.	Total	Ward	Priv.
1928	593	233	360	11	5	6	1:54	1:46	1:60
1929	646	215	431	18	9	9	1:36	1:27	1:44
1930	655	249	406	18	5	13	1:36	1:49	1:31
1931	605	248	357	19	7	12	1:32	1:35	1:29
1932	608	308	300	11	5	6	1:55	1:61	1:50
1933	466	192	274	18	6	12	1:26	1:32	1:23
1934	496	180	316	17	5	12	1:29	1:36	1:26
1935	562	215	347	33	12	21	1:17	1:20	1:15
1936	701	360	341	29	13	16	1:24	1:28	1:21
1937	817	503	314	27	10	17	1:30	1:50	1:18
1938	853	623	230	39	16	23	1:22	1:39	1:10
1939	795	473	322	28	9	19	1:28	1:53	1:17
1940	659	352	307	25	5	20	1:26	1:70	1:15
1941	693	394	299	23	11	12	1:30	1:36	1:25
Total	9149	4605	4544	316	118	198	1:29	1:39	1:23

* From St. Ann's Maternity Hospital.

Submitted for publication February 16, 1942.

TABLE 2
Chief Indications For Cesarean Section

	No. Cases
Contracted pelvis (all types) . . .	186
Previous stillbirth and difficult delivery . . .	27
Elderly primipara	25
Previous plastic repair	10
Previous cesarean section	18
Large baby	8
Placenta praevia	11
Preeclamptic toxemia and nephritis . . .	7
Elective	4
Eclampsia	2
Pelvic tumor	2
Previous myomectomy	2
Threatened rupture of uterus	2
Cardiac disease	3
Diabetes	1
Rupture of uterus	1
Breech	1
Premature separation of placenta . . .	1
Malpresentation of fetus	1
Band's ring	2
Hemiplegia	1
Post-encephalitic conditions	1

had several indications, and these are classified according to the major indication in each case. Contracted pelvis was the most frequent indication for section, occurring in about 58 per cent of the cases. Next in order were histories of previous stillbirths and difficult deliveries, and pregnancies in elderly primiparas. Two cesarean sections were performed for eclampsia, in 1930 and 1922. This is not an ideal treatment for eclampsia and is indicated only in rare instances in which the cervix is rigid and undilated, as in elderly primiparas, and when venesection and eliminative treatment have not resulted in improvement. The necessity for this measure is now being eliminated by better prenatal care and newer methods of treatment.

Obstetric History

The series included 170 primiparas and 146 multiparas. A resume of their obstetric histories is given in table 3. Eighty-six had previously been delivered vaginally of 113 babies; in this group there had been 57 stillbirths, and 18 babies had died as a result of delivery.

TABLE 3
Obstetric History of Patients

	Maternal			Infant			Still-		Total Fetal
	No. Cases	Deaths	Rate	No.	Deaths	Rate	No.	Rate	
Previous Cesarean Section	88	2	2.27	7	7.95	0	0	7	7.95
One Previous Cesarean	70	1	1.42	3	4.28	0	0	3	4.28
Two Previous Cesareans	16	1	6.25	4	25.0	0	0	4	25.0
Three Previous Cesareans	2	0	0	0	0	0	0	0	0
Previous Vaginal Delivery	86	0	0	18	2.93	57	6.62	75	8.72

Age

The ages of the patients ranged from 13 to 46 years. Two patients were 13 years of age and five were 15; all these had contracted pelvis. One multipara, aged 45 years, a diabetic, was delivered by cesarean section of a baby weighing 11 pounds. The oldest primipara was 46 years old. The most favorable age in our series was between 25 and 34 (table 4).

Condition of the Membranes

The condition of the membranes is summarized in table 5. In 258 cases the mem-

TABLE 4
Mortality Rate According to the Age of the Patients

Age	All Cases			Primiparas			Multiparas		
	No. Cases	Deaths	No. Perct.	No. Cases	Deaths	No. Perct.	No. Cases	Deaths	No. Perct.
13-19 years	28	0	0	26	0	0	2	0	0
20-24 years	37	2	5.40	28	2	7.14	9	0	0
25-29 years	78	1	1.27	38	1	2.63	40	0	0
30-34 years	87	4	4.59	33	0	0	54	4	7.40
35-39 years	57	1	1.75	30	1	3.33	27	0	0
40-46 years	29	0	0	15	0	0	14	0	0
Total	316	8	2.53	1	1.26		1	1.26	

branes were unruptured at the time of operation; in 58 the membranes had been ruptured from one hour to more than twenty-four hours; and in one case they had been ruptured more than seventy-five hours. In the group with intact membranes the maternal death rate was high, while in the group in which the membranes had been ruptured from twelve to twenty-four hours there were no deaths. There was one death in the group with membranes ruptured over twenty-four hours. It is interesting to note that of the seven maternal deaths occurring in the cases with intact membranes six followed classical sections and one followed the Porro operation. Usually about one-half of the deaths following classical cesarean section in cases with ruptured membranes are from sepsis, and the mortality of the classical operation exceeds that of the low flap procedure. While our figures are too small for comparison we had no deaths following rupture of the membranes with the classical operation; in the ruptured membrane group there was only one maternal death, and that followed the low flap operation.

TABLE 5
Condition of the Membranes

	No. Cases	Morbidity	Mortality
Membranes intact . . .	258	41	7
Classical	244	35	6
Low flap	12	6	0
Porro	2	0	1
Membranes ruptured			
less than 12 hours . . .	35	6	0
Classical	32	4	0
Low flap	3	2	0
Membranes ruptured			
12 to 24 hours	13	6	0
Classical	8	1	0
Low flap	2	2	0
Latzko	3	3	0
Membranes ruptured			
over 24 hours	10	4	1
Classical	5	1	0
Low flap	3	2	1
Latzko	1	0	0
Waters	1	1	0

Morbidity

Morbidity was based on an elevation of temperature to 100.4 F. for two or more successive days, exclusive of the first post-operative day. The duration of labor and the length of time elapsing between rupture of the membranes and operation had a definite influence on the morbidity as well as the mortality. In our series there was a total morbidity of 64 cases, but excluding 5 cases (one each of lobar pneumonia, breast abscess, asthma, mastoiditis, and meningitis) which could not be attributed to the operation, there remains a net morbidity of 59 cases, as follows:

	No. Cases
Pneumonia	2
Peritonitis	4
Infected wound	10
Distention	5
Anemia	3
Convulsions	2
Pyelitis	3
Intestinal obstruction	1
Phlebitis	5
Cardiovascular collapse	1
Pulmonary embolism	1
Sapremia	16
Shock	3
Hematoma of wound	1
Bronchitis	2
	<hr/> 59

In the other 252 cases of the series there was no evidence of morbidity.

Mortality

There were eight deaths in the series—a mortality rate of 2.53 per cent. Brief summaries of these eight cases are given:

Case 1. A private patient, Para III, aged 33, had been in labor for five and a half hours before she was admitted to the hospital. Her blood pressure was 90 systolic, 70 diastolic; her abdomen was tense, she had severe colicky pains, and the fetal heart was inaudible. A diagnosis of placental apoplexy was made. An infusion of 10 per cent glucose was given immediately; her blood pressure following this was 120 systolic, 66 diastolic. A Porro section was done. The patient died on the table, from shock.

Case 2. This was a 30 year old private patient, Para IV, with a funnel pelvis, who had had two previous cesarean sections. She had been in labor for five hours when she was admitted to the hospital. She had frequent severe contractions and was unable to assume an upright position. A diagnosis of rupture of the uterus was made. An infusion

was given. Operation revealed a complete rupture 5 cm. in diameter in the old uterine scar. The scar was excised and the uterus closed in layers. The patient died from peritonitis on the fourth postoperative day. The child is living.

Case 3. A primipara, aged 26, a ward patient, with a contracted pelvis, had been in labor for forty-seven hours before section was performed. She died on the fifth post-operative day, from peritonitis. The child is living.

Case 4. This was a 22 year old primipara, a private patient. Labor was overdue when cesarean section was performed, but there had been no contractions and there was no engagement. No vaginal or rectal examinations were made. The patient was delivered of a large baby, and died of meningitis on the ninth day. The child is living.

Case 5. This was a private patient, Para III, aged 33, with a contracted pelvis. Her first pregnancy had been terminated by a high forceps delivery, and there had been a third degree laceration; her second delivery was by cesarean section. No vaginal or rectal examinations were made. She died from peritonitis on the third day after a cesarean operation. The child is living.

Case 6. This 39 year old primipara, a private patient, with a funnel pelvis, had had a previous myomectomy. She had been in labor ten and a half hours; the membranes were intact. One vaginal and one rectal examination were made. She died on the fourth day after operation from intestinal obstruction. The child is living.

Case 7. This was a private patient 30 years of age, Para VII, with nephritic toxemia. The membranes were intact. No examinations were made. The patient was delivered of a large baby by cesarean section, and died of lobar pneumonia on the ninth day. The child is living.

Case 8. A primipara, aged 23, a ward patient, had been in labor for twenty-four hours and the membranes had been ruptured for twenty-seven hours. Four vaginal examinations were made. A low flap cesarean was done and the patient died on the eleventh day, of pulmonary embolism. The child is living.

In two cases (one of placental apoplexy and one of ruptured uterus) the deaths are charged to the patients' negligence, as both had been warned of the dangers of delay in entering the hospital.

Infant Mortality

Three babies in this series (.094 per cent) were stillborn, and fourteen (4.43 per cent) died after birth. In the two cases of placenta praevia and in the case of abruptio placentae the babies were stillborn. Two infants died of osteogenesis imperfecta, four of prematurity, one of enlarged adrenals, one of congenital atelectasis, one of congenital heart disease, one of congenital absence of kidneys. One died on the fifteenth day, of cerebral hemorrhage, and two on the twenty-third day, of infectious diarrhea.

Summary and Conclusions

In a series of 9,149 deliveries, 316 cesarean sections were performed, including 226 single and 90 repeated sections. Of the total, 287 were typical conservative sections, 21 were low flap sections, 4 Latzko, 3 Porro, and 1 a Waters section. The low flap operation was done in 21 cases of early and late labor, with little or no contamination. In 6 of the low flap cases there was no indication of labor. The duration of labor in the remaining 15 cases varied from two to thirty-six hours, the average being 16 hours. Three patients were in labor 24 hours or longer.

Disproportion due to contracted pelvis was the indication for interference in 186 cases.

The uterine cicatrix ruptured in 2 cases of repeated section. Both patients had been in labor approximately five hours before admission to the hospital. One died of peritonitis on the fourth day, and the other made an uneventful recovery following a Porro operation.

The gross mortality was 2.53 per cent, but the deduction of 2 cases (one of meningitis and one of lobar pneumonia) in which death was not attributable to the operation leaves a net mortality of 1.89 per cent.

The earlier section is performed in clearly indicated cases the lower will be the mortality and morbidity. Too conservative an attitude, leading to too late an operation, results in increased mortality and morbidity.

Even in the best of hands and under good aseptic conditions, a patient with unruptured membranes, who has not been in labor and who has not been subjected to vaginal examination, will occasionally become infected and die of peritonitis, infection apparently originating in the uterine wound by extension from the vagina.

A cesarean section is a major abdominal operation and abdominal surgery is never

entirely without danger. A review of the literature and a study of the reports from various maternity clinics lead to the belief that cesarean section is performed far too frequently. Even in the small series of cases here reported it is felt that the number of such operations is too high.

PHYSIOLOGIC TREATMENT OF BURNS

ALEXANDER WEBB, JR., M. D.

RALEIGH

Burned patients are in a precarious condition from the time of the accident until many days later. From the outset there is a major disturbance of body physiology that may in itself cause death; undertreatment or overtreatment may tip the balance in the wrong direction, and finally, infection or toxicity may cause loss of life. Because many adjuncts to therapy are now available, and because the laboratory plays such an important role in the treatment of these cases, it seems feasible to review some of the more important physiologic disturbances and to outline a general mode of treatment.

Immediately after a severe burn there is a shift of body fluids concurrent with shock. Forty-eight to seventy-two hours later the important factor is the amount of toxicity or infection, which is detrimental to the healing of the local site and to the condition of the patient as a whole. It may be well to consider separately the two phases through which the patient passes following a burn: (1) period of shock, and (2) period of toxicity or infection.

Period of Shock

Immediately following a severe burn there may be no evidence of shock, but repeated hemoglobin and specific gravity determinations will reveal a rise in the hemoglobin and in the specific gravity of the blood. This increase is due to a concentration of cellular elements and is an indication of drop in blood volume, increased viscosity, and loss of fluid.

Plasma loss from the vessels accounts for this lowered blood volume. This loss results from: (1) increased permeability of capillaries adjacent to the burned area; (2) local

leakage, especially in second and third degree burns; (3) increased permeability of capillaries remote from the burned area due to concurrent shock; and (4) plasma dilution from parenteral fluids, which do not remain within the vascular system because of reduced osmotic pressure. McIver⁽¹⁾, Harkins⁽²⁾, and Blalock⁽³⁾ have all shown that in edema fluid around the burned area plasma makes up 57 to 70 per cent of the total volume. Moon⁽⁴⁾ states that fluid is taken up from areas remote from a burned site and redeposited in areas adjacent to the burn. This tremendous loss of plasma is progressively deleterious if allowed to continue without some measures for maintaining an adequate blood volume to insure adequate blood flow. Elkinton, Wolff, and Lee⁽⁵⁾ feel that capillary impermeability is not regained for thirty to forty hours; however, this figure would seem to vary with the depth, extensiveness, and severity of the burn. The same authors worked out a formula for determining the amount of plasma needed which is at first sight complicated, but which is invaluable in the treatment of the first phase:

$$\text{Plasma needed (in cc.)} = 14 \times 3.5W - \frac{W(100-H_o)H_nPo}{2(100-H_n)H_o}$$

W = Body weight in kilograms
 H_n = Normal hematocrit reading (41-45%)
 H_o = Observed hematocrit reading
 Po = Observed plasma protein concentration (normal, 7 Gm. per 100 cc.)

The authors admit that errors may be cumulative and that the figure may be only approximate; however, the value of their contribution is not lessened by such admissions. Application of this formula in a severe case will at first astound the observer, for during the first seventy-two hours as much as 7,000 to 8,000 cc. of plasma may be needed to prevent irreparable damage.

Tenery⁽⁶⁾ found that about one-half of the total hemoconcentration occurs during the first six hours following a burn. This indi-

cates the urgency of early plasma administration, and raises another important point for consideration. Hematocrit readings take time, and there may be some doubt as to the adequacy of the plasma infusion. Hemoglobin determinations are simple and rapid, but it must be assumed that a normal hemoglobin was present prior to the burn. Hemolysis of red cells in the burned area is a source of error in calculating the amount of plasma needed. The LaMotte specific gravity machine advocated by Scudder⁽⁷⁾ saves much time and is much more accurate than either of the other methods, as it takes into consideration not only cellular elements but also the amount of protein present. A specific gravity which continues to rise despite administration of fluids and plasma is indicative of further hemoconcentration and inadequate therapy.

Water loss. Collier and Maddock⁽⁸⁾ showed that the normal body loses 2000 to 4000 cc. of water every twenty-four hours through insensible perspiration and urine excretion alone, and that the higher figure is more accurate with fever. McClure⁽⁹⁾ showed that a burned surface loses two and a half times as much water as normal epithelium. Thus, if one third of the body were burned, 500 additional cubic centimeters of water would be required to make up the loss. These figures indicate that a badly burned patient needs 4000 to 5000 cc. of water every twenty-four hours. The amount of urine voided is a good index of the patient's condition, and the excretion of 1500 to 2000 cc. in twenty-four hours is a hopeful sign. Vomiting increases the fluid loss, and necessitates measuring the vomitus and replacing the water lost in it.

Electrolyte changes. The consensus of opinion now is that the loss of chlorides is not as important as Davidson⁽¹⁰⁾ first stated. The administration of 500-1000 cc. of normal saline within twenty-four hours is sufficient.

There is a loss of sodium in a burned area, proven by sodium determinations of arterial and venous blood from the injured site. Potassium increases according to tissue destruction at the burned site, hemolysis of

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red cells, and further tissue destruction from progressive dehydration. Early adequate treatment prevents changes in the electrolytes of the blood.

Tissue anoxia. Lack of capillary tone, hemoconcentration, and increased viscosity cut down blood flow. The tissues thus are deprived of oxygen, and they attempt to remedy this deficiency by further absorption of oxygen from hemoglobin. Arterial blood, as it passes through the capillaries, normally gives up only 40 per cent of its oxygen, leaving 60 per cent, with a tension equivalent to 35 mm. of mercury. In severe shock, as much as 80 per cent of oxygen is removed, leaving a tension of 14 mm. of mercury. This further lowering of pressure is transmitted throughout the vascular tree, creating a vicious circle that is combatted best by high oxygen inhalation to reoxygenate the depleted hemoglobin⁽¹¹⁾.

Period of Toxicity and Infection

If the patient survives deep shock, if an eschar is formed, and if fluid replacement has been adequate, the most critical phase has been passed. However, seemingly adequately treated patients may suffer further complications. The following are seen most commonly:

Liver damage. Decrease in liver activity has been noted forty-eight to seventy-two hours following a severe burn, leading to marked jaundice and death on the fifth or sixth day. Wolff, Elkinton, and Rhoads⁽¹²⁾ have reported several such cases. Postmortem examinations have revealed acute toxic hepatitis, degeneration, and necrosis. It is still undecided whether this condition is due to a toxin, to decomposed tissue, or to protein decomposition products. It is known that some substances are absorbed from a burned surface, especially those of small molecular volume—for example, mercurials and sulfanilamide. The dangers of liver damage cannot be underestimated, and to augment decreased liver function large amounts of glucose are indicated during the first seven or eight days.

Anemia follows hemoconcentration after adequate blood volume has been restored. Hemolysis of red cells in the burned area,

loss of red cells through permeable capillaries, and hemolysis by infection and toxicity so lower the red cell count that in the later stages whole blood should be used to regain a normal count.

Albuminuria and oliguria may continue through the first phase into the second. The microscopic and clinical picture may be that of a nephrotic syndrome. Low blood proteins indicate a nutritional edema. It is imperative that water and plasma balance be maintained throughout the first ten days, venoclysis being employed if insufficient amounts are ingested orally. Replacement of proteins and adequate water intake prevent edema and maintain an adequate urinary output.

Infection. The amount of infection of the burned site is dependent upon the immediate local treatment. Davidson's report on tannic acid eschar formation⁽¹⁰⁾ served to revolutionize the treatment of burns, but too often with this process the surgical principles have been neglected. The result has been a high percentage of infected burned surfaces because debridement, antiseptics, and careful observation of the tanned surface have not been employed. A further drawback of tannic acid or tannic acid and silver nitrate is the fact that adjacent normal protein is precipitated. The surrounding skin is not adequately prepared, and bacteria are allowed to grow from the normal skin to the denuded area, and to flourish under this protective coating until the entire site is infected. The eschar must then be removed to fight the infection. Too often the eschar which helped the patient to survive the first phase is a drawback during the second phase, and may result in a large amount of scar tissue. Aldrich⁽¹³⁾ first advocated gentian violet because of its bacteriostatic activity. His "triple-dye" (2 per cent gentian violet, 1 per cent brilliant green, 0.1 per cent neutral acriflavine) has now been shown by the British to be superior to the original gentian violet or tannic acid therapy⁽¹⁴⁾. Pickrell⁽¹⁵⁾ has released a preliminary report on the use of sulfadiazine in triethanolamine which is most encouraging. This method has the advantage of bacteriostasis,

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analgesia, and the formation of a transparent eschar⁽¹⁴⁾.

Intercurrent infections are dependent upon the severity of the burn and upon the adequacy of eschar formation and nursing care. Hypostatic pneumonia, thrombophlebitis, decubital ulcers, septicemia, and other complications can be avoided by treating the local area so that frequent changes in position are possible and nursing care is not difficult. The sulfonamides given orally or parenterally have done much to cut down the mortality and morbidity from intercurrent infections.

Treatment

The outstanding symptom immediately following a severe burn is pain. Enough morphine should be administered to allay pain and to prevent as much shock as possible. Usually there is no severe shock when the patient is rushed to the hospital. Upon admission he should be taken to the operating room immediately, a light gas anesthetic begun, and warm blankets and hot water bottles applied to the entire body. One extremity or portion of the trunk should be exposed at one time, the burned skin debrided, antiseptics effected, and a tanning solution applied. Concurrently a continuous infusion should be instituted, preferably by drip, containing half plasma and half 5 per cent glucose or 5 per cent glucose and normal saline. A specific gravity or hemoglobin determination should be done at once. Some form of cortical extract should be administered intramuscularly or in the infusion solution.

As soon as the entire surface has thus been treated the patient should be moved to a bed which has been brought to the operating room, the body being protected by a heat cradle. Care should be used to see that the intravenous solution continues to flow while the patient is being transferred to the ward. If possible, repeated blood pressure, hemoglobin and specific gravity determinations should be made. If the patient shows progressive hemoconcentration, the speed of the drip can be increased and oxygen inhalations begun. Such a routine will prevent deep shock from occurring, and fluids and other treatment are thus administered on a rational basis.

The intake and output of fluids should be carefully measured. A goodly part of the water intake may be accomplished by mouth

if vomiting is not present. The water, plasma, and electrolyte balance must be repeatedly evaluated. A positive water balance accomplished by 5 per cent glucose insures an adequate urinary output and guards against further liver damage.

During the second phase, repeated red cell counts and hemoglobin determinations indicate the necessity for whole blood. If the plasma volume has been restored, if there is no further shock, and if the patient seems to be doing well, the continuous infusion may be replaced by daily or twice daily infusions of 5 per cent glucose in normal saline until adequate amounts can be taken by mouth.

Adrenal cortical extract has been shown to be invaluable in the treatment of shock accompanying burns. It not only shortens the period during which protein leaks through the capillaries (by decreasing their permeability), but it also cuts down the loss of plasma, sodium, and chlorides, and helps prevent an increase in potassium. Eschatin 5-10 cc., Cortical Extract (Upjohn) 1-2 cc., Cortate (Schering) 5-10 mg., or the synthetic product desoxycorticosterone acetate, 10 mg. every four hours, is advocated.

As the patient improves, a high protein, high salt diet may be administered. Fluids should be taken entirely by mouth. After ten to twelve days the eschar may be removed by saline compresses, and if the surface is clean, any necessary grafting of skin may be begun before too much scar tissue has formed and contractures begun.

Conclusions

1. The first phase of severe burns is one of shock, large amounts of plasma being lost through increased permeability of the capillaries.

2. Infusions of plasma and glucose, aided by cortical extract, are vital. Laboratory determinations are imperative if the clinician is to know the status of his patient at all times.

3. The dangers of the second phase of burns are largely alleviated by adequate care during the first phase. However, death may occur in this stage as a result of hepatic damage. Glucose in large amounts helps guard against this factor.

4. Sufficient urinary output gives a good prognosis.

5. There are new and important adjuncts in the local treatment of the burned surface.

14. Ketter, W. E.: The Treatment of Burns With a Spray of Sulfadiazine, North Carolina M. J. 3:190 (April) 1942.

THE ETIOLOGY AND MANAGEMENT OF UTERINE PROLAPSE

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In discussing the etiology of uterine prolapse, it is well to consider briefly the pelvic anatomy. The pelvis is spanned by two planes of supporting tissues, one above the other. Each plane is attached to the pelvic wall practically all the way around, so that it forms a fibromuscular diaphragm.

The lower plane or diaphragm lies below the vagina, and is composed chiefly of the levator ani muscle on each side and its fascial attachments. This is penetrated by openings produced by the urethra, vagina and rectum. The rectum and urethra are fairly well protected, but the vaginal opening forms the weak spot in the pelvic floor. Under normal conditions the vaginal opening is fairly well protected by: (a) being well forward and out of line of direct abdominal pressure, (b) the direction of the canal's being such that intra-abdominal pressure tends to close the canal instead of opening it, and (c) the overlying fibromuscular plane and the body of the uterus.

The upper plane lies above the vaginal opening, and is composed of the uterine and vesical segments. Each segment consists of a viscus and its surrounding supports. The uterine support in the upper plane consists of the uterosacral ligaments posteriorly, the broad ligaments laterally, and the bladder wall and vaginal wall and connective tissue between them (comprising the uteropubic plane) anteriorly.

It is these two planes which directly resist intra-abdominal pressure, but there is also another factor involved in maintaining pelvic support. That factor is the mechanism by which the pressure is deflected from the weak area and distributed over the supporting planes. In the normal anterior position of the uterus, the intra-abdominal pressure is received on the posterior surface of the uterus and distributed over a wide area of supporting planes. The greater the pressure from above the more firmly is the corpus pressed over the opening. As the corpus is pressed downward, the cervix is pushed backward, putting the vaginal walls

on the stretch, anteriorly and posteriorly, and approximating them. This still further protects against protrusion at the vaginal orifice. When the uterus is displaced backward, the deflecting mechanism is disarranged. The disarrangement of the deflecting mechanism leads to loss of support sooner or later. With the pelvic floor torn and the uterosacral ligaments stretched so that the cervix descends and the corpus uteri goes back, the whole mechanism by which the intra-abdominal pressure is resisted by these two planes is disintegrated and the uterus and bladder and anterior rectal walls are gradually forced down.

The time required for this descending process to take place varies in different cases. When the pelvic floor damage is slight and the tissues have good tone, the patient may go for years without any prolapse. It is when the tissues lose their tone, generally with advancing years, that the stretching progresses more rapidly. Thus a patient may suffer considerable prolapse many years following her last parturition.

It is the loss of cervical support that constitutes the essential pathologic process. Prolapse occurs most often in the parous woman, although it is seen frequently in women who have never borne children. The usual production of prolapse may be summarized in the following diagram:

Parturition—laceration of the pelvic floor—retroversion—disarrangement of the deflecting mechanism—prolapse.

Treatment

Surgery is always required for the cure of prolapse. Pessaries can be used as a palliative measure for those who refuse operation or for whom operation is not advisable. There is no standard operation for the cure of prolapse, and many factors are to be considered in planning an operation. The objectives to be attained vary somewhat in different conditions. It should be stated that the repair of a relaxed pelvic floor is a part of every operation for prolapse.

Patients to be operated on for the relief of prolapse of the uterus and bladder may be divided into two groups: those in whom the childbearing function is to be preserved, and those in whom future pregnancies are to be eliminated. For each group there are abdominal and vaginal operations. The following outline taken from Crossen's "Oper-

ative Gynecology"⁽¹⁾ indicates the principal methods of procedure in operating for prolapse of the uterus and bladder, in addition to repair of the relaxed pelvic floor in all cases.

Anatomical Classification of Prolapse Operations

I. Function of pregnancy preserved

A. Vaginal operations

1. Shortening of broad ligaments and elevation and repair of uteropubic plane ("broad ligament plastic")
2. Shortening of round ligaments
3. Shortening of uterosacral tissues

B. Abdominal operations

1. Shortening of round ligaments
2. Shortening of uterosacral tissues
3. Elevation and repair of uteropubic plane from above

II. Future pregnancy eliminated

A. Vaginal operations

1. Uterus used for support
 - a. Subvesical interposition of corpus uteri
 - b. Amputation of corpus with subvesical interposition of cervix uteri
 - c. Subpubic fixation of cervix uteri
2. Vagina closed (colpocleisis)
 - a. Partial closure of vagina
 - b. Complete closure of vagina
3. Uterus removed
 - a. Hysterectomy by preliminary clamping followed by ligation
 - b. Hysterectomy by primary ligation

B. Abdominal operations

1. Fixation of uterus to abdominal wall
 - a. Suturing of corpus uteri to wall
 - b. Implantation of corpus uteri in wall
2. Removal of uterus
 - a. Supravaginal hysterectomy with high fixation of cervical stump
 - b. Complete hysterectomy with high fixation of vaginal vault

To this classification I should like to add

1. Crossen and Crossen: *Operative Gynecology*, St. Louis, The C. V. Mosby Co., 1935.

the vaginal hysterectomy by the clamp method advocated by Kennedy⁽²⁾.

If the function of pregnancy is to be preserved and there is no complicating abdominal pathology, the broad ligament plastic operation known generally as the Manchester-Fothergill operation⁽³⁾, meets the requirements admirably. This operation has a wide margin of safety. Shaw, in 2293 cases over a period of twenty-seven years, had but ten deaths, a mortality of 0.43 per cent. A fairly large number of women have been carried through pregnancy, labor and the puerperium without serious complications or dystocia referable to the operation. In the childbearing period the best results are obtained when the cervix is not amputated. The Manchester-Fothergill operation is applicable to all degrees of prolapse, and can be performed under local anesthesia.

In cases where it is necessary to enter the abdomen for the correction of associated pathologic lesions, the prolapse can be taken care of by shortening the round ligaments and elevating the uteropubic plane by repair of the cystocele from below and suspension from above.

When future pregnancy is to be eliminated one has a choice of vaginal or abdominal operations and of removing or not removing the corpus uteri. In cases where there is no associated abdominal pathology there seems to be little reason for using the abdominal operation, as one can accomplish all that is desired by the vaginal operation, which has a much wider margin of safety.

In elderly women, where the function of the vagina need no longer be considered, the LeFort or vaginal closure operation⁽⁴⁾ is the simplest and safest that the surgeon can choose. The results are good in almost 96 per cent of the cases; the mortality is negligible, and the operation can be done under local anesthesia.

Vaginal hysterectomy by the suture method is an old procedure for the cure of prolapse⁽⁵⁾, but in some instances it shortens the vagina to the extent that it is no longer functional. Technically, the operation may be quite difficult.

Vaginal hysterectomy by the clamp method

2. Kennedy, J. W.: Vaginal Hysterectomy, Clamp Method, for Uterine Prolapse, *Am. J. Surg.* 33:128 (Sept.) 1936.

3. Gordon, Charles A.: Treatment of Prolapse of the Uterus by the Manchester-Fothergill Operation, *Am. J. Surg.* 33:464 (Sept.) 1936.

4. Adair, Fred L. and DaSef, Laura: LeFort Operation for Uterine Prolapse, *Am. J. Surg.* 33:459 (Sept.) 1936.

5. Heaney, N. Sprout: Vaginal Hysterectomy in the Cure of Prolapsus Uteri, *Am. J. Surg.* 33:471 (Sept.) 1936.

of Kennedy⁽²⁾, on the other hand, has a great deal to recommend it as one of the procedures of choice in the cure of prolapse. This operation has as its underlying principle the shortening of the uterine supports by retraction of the cut ligaments. The vaginal canal is lengthened instead of being shortened. This operation can be performed in one fourth the time required for the suture method, and it has the lowest mortality of any major operative procedure. It is amazing how well these patients get along post-operatively as compared to patients who have had a hysterectomy through the abdominal route.

When abdominal pathology requires opening the abdomen, the prolapse can be remedied from above. The uterus, the cervix, or even the vaginal wall, if it is long enough can be sutured directly to the abdominal wall. At times, these procedures are indicated, but they are not as safe as operations from below and they do not correct the underlying pathology. The interposition operation of Watkins is a useful procedure, but has the disadvantage of making future treatments of pathology of the corpus difficult. This operation is most useful where the prolapse is moderate and the cystocele is a prominent part of the picture.

Summary

In the last analysis, the surgeon should choose an operation with which he is familiar and one that has produced good results in his hands. If I have appeared to promote the broad ligament shortening operation of Manchester⁽³⁾ and the hysterectomy by the clamp method as advocated by Kennedy⁽²⁾, it is only because I have been greatly impressed with advantages of these procedures in my gynecologic training. I do feel that they will aid the gynecologist greatly in the management of uterine prolapse.

Abstract of Discussion

Dr. John Burwell (Greensboro): Dr. Doshier's paper leaves little for discussion. I want to compliment him on his concise and comprehensive coverage of this subject.

While Dr. Doshier stressed the role of parity and senility in the etiology of prolapse, I believe that it is proper to bring out the fact that in nulliparous women prolapse may be due to neoplasms and infections. These factors, of course, bring added difficulties to the procedure of vaginal hysterectomy.

Many of us are prone to ignore or minimize the discomforts of uterine malpositions. These women

frequently suffer almost constant nagging pain, and they certainly deserve consideration on the part of the gynecologist. While many of them may receive temporary relief with the Smith-Hodge or doughnut pessary, surgery usually furnishes the only permanent relief.

Dr. W. A. Graham (Durham): I want to thank Dr. Doshier for this excellent paper and the clarity with which he presented it.

The incidence of prolapse of the uterus, irrespective of degree, is less in the present generation than in the past. This may be due to the better care women receive during pregnancy and labor. The condition is still not an uncommon occurrence, however.

In regard to the etiology, I agree with Dr. Doshier that the pelvic floor is most important. Prolapse is the giving-way of the parametric ligaments. This was proven in studies made on cadavers.

There are three operations for prolapse which I advocate. I feel that every case should be treated, according to the skill of the particular operator and the age of the patient, by one of these three methods.

The first is Manchester's parametric fixation. It is chiefly applicable to women in the childbearing period. In women past the menopause, in condition satisfactory for surgical operation, perhaps the total hysterectomy by the vaginal route is the operation of choice. In patients who are poor operative risks, the LeFort operation is really the most satisfactory.

Dr. Doshier: The Manchester-Fothergill operation, the clamp method of Kennedy, and the LeFort method are three procedures that we have to offer the patient with prolapse that we didn't have a few years ago. It is surprising how little appreciated and how infrequently done is the Manchester operation or the LeFort procedure.

The Significance of Posture in Abdominal Lesions.

—If the patient lies on either side there is no peritonitis. If she lies with her right thigh flexed, she may have phlebitis, but she is more apt to have appendicitis. This position does not relieve the pain of adnexitis, or of urinary tract lesions. It is, therefore, of real diagnostic value. In perforation of a viscus the patient lies immobile, stiff as a mummy. In ruptured ectopic, she is restless, tossing from side to side, begging for water. In streptococcal cellulitis, she is bright, flushed, and talkative. Her euphoria may confuse the unwary.—William J. Carrington: *Differential Diagnosis of Acute Lower Abdominal Lesions in the Female*, J. M. Soc. New Jersey 38:504 (Sept.) 1941.

The Doctor's Responsibility for Children —

There are social responsibilities that it is imperative to recognize in connection with children. Some have competent but many have incompetent parents. The doctor certainly has responsibility in this field. In the first place, he brings the child into the world. He treats the various ills to which children are peculiarly susceptible, and, in matters of nutrition and growth, he takes the initiative and leadership, frequently being obliged to hold parents to their task. In the field of immunization the individual doctor has not taken so much initiative as might be desired.—A. Warren Stearns: *The Role of the Physician in a Competitive Society*.—New England J. Med. 224: 885 (May 22) 1941.

THE USE AND EVALUATION OF ANESTHESIA BY "FREEZING" FOR SURGERY OF THE EXTREMITIES IN DIABETIC PATIENTS

A Case Report

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Much has been said in recent years about types of surgery to be used in patients suffering from diabetes mellitus. McKittrick⁽¹⁾ has given us excellent reviews of indications for radical and conservative operative procedures. All too often, however, we have given little or no thought to the type of anesthesia to be used. Local anesthesia in grossly or potentially infected areas in which the blood supply is reduced because of presenile arteriosclerosis is more than dangerous. Ether gravely increases the morbidity in diabetic surgery. Cyclopropane, ethylene and nitrous oxide and oxygen have been our mainstays for anesthetics of short duration or for lesions about the chest, head, neck and upper extremities, while spinal anesthesia has been generally used in amputations or major surgical procedures of the abdomen and lower extremities.

During the past few years, a new addition has been made to our choice of procedures by Bancroft⁽²⁾, Allen⁽³⁾ and others⁽⁴⁾ which is applicable to all types of surgery of the extremities. This has been popularly called the "freezing" method of anesthesia.

When I first heard of freezing extremities for amputation and other procedures, I immediately recalled patients biting their lips in pain while someone lanced an abscess of the hand, finger, or axilla, using an ethyl chloride spray. Certainly that has little or no real anesthetic value. The procedure I wish to describe, however, is the use of ordinary ice in the form of an ice pack which is applied as follows: A light tourniquet is placed about the leg several inches above the desired point of amputation, and the leg is then placed on a sheet filled with crushed

ice and wrapped so that there is a layer of ice about one to one and a half inches thick all over the leg and foot. This remains in place for one to one and a quarter hours. The patient is then taken to the operating room. The ice is removed and the leg immediately cleansed in the usual way. The amputation is performed in the usual manner.

Several variations of the procedure of application have been used. Patients able to sit up may insert the extremity into a vessel of cracked ice. Ice bags of very thin rubber have been used. Recently a machine has been devised to fit over the extremity and reduce the temperature to any desired level. A longer application of the ice may be necessary to produce anesthesia in large, obese limbs.

The advantages of this method in selected cases are threefold:

1. Infection is diminished.
2. Anesthetic shock is eliminated.
3. Postoperative pulmonary complications are decreased.

Infection is diminished.

We have long known that bacteria are probably more sensitive to changes in temperature than to any other physical agent attacking them. While heat accelerates their growth before reaching the point of inhibition and death, cold produces a gradual cessation of growth before reaching the point of inhibition and death. I do not believe the temperature in the extremities can be lowered sufficiently by this means to produce death of the bacteria, but it can bring about inhibition of growth without cellular changes. This is in accordance with observations made by Temple Fay⁽⁵⁾ and others in their experimental reduction of body temperatures for the control of pain. They noted some destruction of cancer cells at temperatures which did no permanent damage to normal cells and also observed several times that some infections seemed definitely attenuated after the so-called "freezing".

Anesthetic shock is eliminated.

Although the majority of patients we see are able to withstand easily a small amount of spinal anesthesia, there is no doubt that severe shock is sometimes produced in elderly patients. With or without this state of shock, the marked reduction of blood

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2. Bancroft, F. W.: A New Method of Anesthesia in Diabetic Surgery [In Press].
3. Allen, F. M.: Reduced Temperatures in Surgery. I. Surgery of Limbs, Am. J. Surg. 52:225 (May) 1941.
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5. Fay, T.: Observations on Prolonged Human Refrigeration, New York State J. Med. 40:1351-1353 (Sept. 15) 1940.

pressure and concomitant blood flow through the liver already damaged by the fatty infiltration associated with diabetes may bring about a hepatorenal syndrome producing death. With shock urinary output falls and diabetes is more difficult to control.

Postoperative pulmonary complications are decreased.

Since there is no change in the depth of respiration such as is produced by spinal anesthesia, and also since there is no irritating substance to be inhaled, postoperative pulmonary conditions such as atelectasis, pneumonia and infarcts are uncommon.

With the use of the "freezing" method of anesthesia, healing takes place quite normally. Bancroft states that where profuse drainage and positive cultures seem to indicate definite infection in the stump, this infection can be lessened by repacking the stump in ice. This statement does not appear to be rational, but other investigators have borne out these observations⁶. Many surgeons use catgut sutures and ligatures throughout, and always insert drains. Callander⁷ and others have shown that this practice always increases the tendency toward infection. They have advised short flap or no flap amputations, with the use of fine silk sutures and no drains. The obliteration of any dead space by careful closure, combined with a minimum of trauma to the tissues, will do much to prevent infection.

Case Report

The following case report will serve to illustrate the procedure. T. C., a colored male aged 75, was admitted to Lincoln Hospital on December 17, 1941, with a partial gangrene of the left foot. He had been a known diabetic for six years, and six months before admission he had a blood sugar of 410 mg. per 100 cc. On several occasions, both acetone and diacetic acid had been found in the urine.

Two weeks before admission, he developed soreness of the left foot, and was unable to bear weight upon it. He soon noticed a discoloration of the great toe which rapidly spread to the second and third toes, and, three days before admission, to the anterior third of the foot.

On physical examination the patient was found to be drowsy and disorientated. His temperature was 100.4 F., pulse 100, respirations 24, and blood pressure 160 systolic, 100 diastolic. The general physical findings were negative except for generalized arteriosclerosis and a clear cut, moist, foul-smelling gangrene of the distal third of the foot. The dorsalis pedis, posterior tibial and popliteal pulsations could not be felt. The urine showed a 4 plus reaction for sugar, and diacetic and acetone tests were positive. The blood sugar was 660 mg. per 100 cc.

A diagnosis of (1) impending diabetic coma and (2) gangrene of the left foot and toes was made.

After three days of preoperative preparation the patient was alert, the urine was negative except for a 2 plus reaction for sugar, and the blood sugar was 160 mg. per 100 cc.

Operative preparation and procedure: At 5 and 6 a. m., the patient was given 1½ grains of nembutal. At 6:15 a tourniquet was placed about the mid-thigh fairly loosely. Immediately the leg below the tourniquet was packed in cracked ice and wrapped in a sheet. The patient complained for about five minutes that his leg was cold, and then fell asleep. At 7:15 a.m. he was moved to the operating room, and at 7:30 the ice was removed and the leg was cleansed with iodine and alcohol and draped. A very short flap amputation was performed about four inches above the knee. There was profuse bleeding throughout, indicating that the tourniquet was not very tight. There was an exclamation from the patient when the sciatic nerve was clamped and cut. The periosteum was removed from the end of the bone and the endosteum curetted away. The nerve was injected with absolute alcohol and was ligated. All bleeding points were ligated with fine black silk. The fascia was closed with closely placed interrupted single medium black silk sutures, and the skin was closed with interrupted fine black silk sutures. No drains were used. A dressing was applied, and the patient was returned to the ward in good condition. During the operation, there was no change in the blood pressure and there was a gradual increase of ten beats per minute in the pulse rate.

Postoperative Course: Within two hours after the operation, the patient was sitting up in bed, but was drowsy. That evening he did not recall being operated upon. The

6. McElvenny, R. T.: The Effect of Cooling Traumatized and Potentially Infected Limbs, Surg., Gynec. and Obs., 73:263 (Aug.) 1941.

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highest postoperative temperature was 99.2 F., on the fourth day. The sutures were removed on the seventh day, and the patient was discharged on the eighth day, the wound completely healed (fig. 1).

Comments

Some explanation of the incorrectly applied term "freezing" should be given. There is actually no freezing of the tissues. The temperature is merely lowered considerably. There is at all times a film of water directly in contact with the leg. Since it requires the removal of about 80 calories per cubic centimeter to change water at 0 C. to ice, there is no danger of any freezing as long as the water remains on the leg. In sub-zero climates it is well known that the application of pure snow to the face will prevent freezing, whereas the dry wind will rapidly create a severe frostbite of the skin and deeper tissues. In actual freezing, minute icicles form and puncture the cell walls and the blood vessels are ruptured. In this type of temperature lowering, no damage is done to the tissues. It is probable that a cessation of cellular activity takes place, just as inhalation and spinal anesthetics produce an inhibition of activity in certain groups of cells⁽⁸⁾.

One might ask why the patient does not develop symptoms of exposure to cold. These symptoms have not been observed with any patients, possibly because the tourniquet is just tight enough to restrict venous return, but not tight enough to interfere with arterial inflow. This prevents the chilled blood from returning to the remainder of the body.

Many writers in recent years have emphasized the possible harmful effects of tourniquets to the healing of the skin flaps and deeper tissues. I have been a subscriber to this belief. Allen has said, however, that the rules about tourniquets are abolished by the use of cold. It is probable that the reduction in cellular activity prevents formation of waste products and reduces the need for oxygen and other products of blood.

In large groups of clinic patients the mortality rates have been lowered more than 100 per cent by the shift from spinal anesthesia to the freezing method.



Fig. 1 Wound healing fourteen days after operation.

Summary

1. A method of "freezing" extremities for amputation or other operative procedures is presented.
2. The physiology involved is discussed.
3. A case in which this anesthesia was used successfully is presented.

Conclusions

A new type of anesthesia for surgery of the extremities which is simple in application, safe in use, and highly successful, has been added to our armamentarium.

Sugar in the Urine.—Persons with sugar in their urines run many hazards. The first is that of being diagnosed a diabetic when the disease is nonexistent. Approximately one seventh of all the patients we have seen with sugar in the urine were thought by us not to have had diabetes at the first visit. One must not be careless with this group. Such patients should have their urines examined every three months for life, warned against overweight and cautioned to report to their physicians if any unusual symptoms occur.—Elliot P. Joslin: *Diabetic Hazards*, New England J. Med. 224:589 (April 3) 1941.

Too-Early Specialization.—There is a tendency today, I believe, to require specialism altogether too early and to leave out of the equipment of the medical man what were known in the old days as the humanities. Although the field of medicine has developed almost unbelievably, there are still, however, other things in life which make life worth living and to which the medical man should not be inattentive.—Winfred Overholser: *The Broadening Horizons of Medicine*, Science 90: 2338 (Oct. 29) 1939.

8. (a) Smith, L. W. and Fay, T.: Observations on Human Beings with Cancer, Maintained at Reduced Temperatures of from 75° to 90° Fahrenheit, *Am. J. Clin. Path.* 16:87-94 (Jan.) 1940.

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A REVIEW OF SOME RECENT ADVANCES IN THE STUDY OF FACTORS IN HEMOLYTIC REACTIONS; THE Rh PROPERTY OF ERYTHROCYTES

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CHAPEL HILL

Landsteiner's demonstration in 1900-1901 of the isoagglutinin-isoagglutinin group properties of human blood is the foundation of present-day technique of blood transfusions. Accurate grouping plus the cross-matching technique has made comparatively infrequent the syndrome observed when an incompatible blood has been transfused^(1,2,3).

The first sign of the "reaction", a chill, usually begins within an hour; the chill is followed shortly by fever, sharp pains, circulatory disturbances and dyspnea. These immediate signs are ascribable to the plugging of small blood vessels by emboli consisting of the agglutinated erythrocytes. Twelve to twenty-four hours later agglutination emboli usually decrease and the effects of lysis become evident. The agglutinated emboli appear to undergo cytolysis and the cell contents and constituents are liberated into the blood stream. This sequence accounts for the blood pigment which appears in the plasma and urine, and for the positive direct van den Bergh test on the serum. The development of oliguria or anuria indicates a grave prognosis, for about one-half of the patients with anuria do not recover⁽⁴⁾. Although necropsy sections of the kidney show degenerative changes of the tubular epithelium and brownish pigment casts in the collecting tubules, the suppression of urine cannot be explained on the basis of a purely physical obstruction to kidney drainage. De Navasquez' experiments⁽⁴⁾ have forced a reconsideration of the older precipitation-urinary pH theory. Pincoffs and Peters⁽⁵⁾ have in preparation a case report of post-transfusion anuria of long standing which was terminated within two hours after splanchnic nerve-block. A report by Daniels

and others⁽⁶⁾ emphasizes the rather extensive interstitial edema of the kidney, a condition which could explain the anuria. Further, the ready excretion of blood pigment in "march" hemoglobinuria⁽⁷⁾, paroxysmal hemoglobinuria, blackwater fever and other types of hemoglobinuria speaks against the perhaps too attractive precipitation-blockage theory. It is recognized, however, that factors other than the absolute quantity of injected blood contribute to the severity of the reaction.

Severe hemolytic reactions can hardly be mistaken, but the variably manifested milder forms of reaction may be confused or may go unrecognized. Any compilation of the frequency of reactions is necessarily somewhat arbitrary and the data are not, therefore, strictly comparable. A collection of data from some recent reports⁽⁸⁾ is presented in table 1 and provides a basis for appraisal of the present status of immunologic and technical knowledge.

The frequency of mild and moderate reactions is probably not precisely that indicated, and some allowance must be made for the inaccuracies incidental to clinical tabulations. On the one hand, the patient's condition may be such as to mask a mild hemolytic reaction, or the hemolytic reaction may proceed at an intensity level too low to produce evident signs, even though the transfused cells can be demonstrated to have disappeared from the recipient's blood^(3,8,9). On the other hand, chill and fever alone may

From the Department of Physiology, School of Medicine, University of North Carolina. Submitted for publication January 22, 1942.

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7. Gilligan, D. R., and Blumgart, H. L.: March Hemoglobinuria: Studies of the Clinical Characteristics, Blood Metabolism and Mechanism: With Observations on Three New Cases and Review of the Literature, Medicine 30: 341-395 (Sept.) 1941.
8. (a) Lundy, J. S.; Tuohy, E. B.; Adams, R. C.; Mousel, L. H., and Seldon, T. H.: Annual Report for 1939 of the Section on Anesthesia: Including Data on Blood Transfusion and a Review of Anesthetic Agents and Methods, From 1921 to 1939, Inclusive, Proc. Staff Meet., Mayo Clin. 15:241-254 (April 17) 1940.
- (b) Lundy, J. S.; Tuohy, E. B.; Adams, R. C.; Mousel, L. H., and Seldon, T. H.: Annual Report for 1940 of the Section on Anesthesia: Including Data on Blood Transfusion and Graduate Training, Proc. Staff Meet., Mayo Clin. 16:241-256 (April 16) 1941.
- (c) Shamov, V. N.: Question of Universal Blood Donor, Vrach. delo 22:403-409, 1941; abstracted, J. A. M. A. 117:492 (Aug. 9) 1941.
- (d) Glinkskiy, A. N.: Transfusion of Cold Conserved Blood, Novy khir. Arkhiv 16:151-156, 1940; abstracted, J. A. M. A. 117:1311 (Oct. 12) 1940.
- (e) Jewsbury, E. C. O.: Reactions After Transfusion of Stored Blood, Brit. M. J. 1:663-665 (May 31) 1941.
- (f) Wiener, A. S.; Oremland, B. H.; Hyman, M. A., and Samwick, A. A.: Transfusion Reactions, Experiences with More than Three Thousand Blood Transfusions, Am. J. Clin. Path. 11:102-121 (Feb.) 1941.
9. Wiener, A. S.: Subdivisions of Group A and Group AB; Immunization of A/2 Individuals Against A/1 Blood with Special Reference to Role of Subgroups in Transfusion Reactions, J. Immunol. 11:181-199 (June) 1941.

TABLE I

A Collection of Data From Some Reports on Frequency of Transfusion Reactions.

Author	Cases Reported	Minimal Reaction* Per Cent	Moderate to Severe Reaction Per Cent	Total Per Cent
Lundy, et al. ^(8a)				
1933	841	—	—	7.2
1937	2,805	6.2	3.5	9.7
1938	3,295	5.2	4.0	9.2
1939	3,723	7.6	1.7	9.3
1940 ^(8b)	3,678	6.8	0.8	7.6
Shamov ^(8c)				
Grouped Blood	1,143	30.7	10.0	40.7
Universal Donor	688	22.1	13.0	35.1
Glinskiy ^(8d)				
Injected Cold (10°-12° C)	214	—	—	26.1
Injected Warm	1,400	—	—	38.0
Jewesbury ^(8e)				
Stored Blood (Av. Age 10.8 days)	389	11.3	8.5	19.8
Wiener, et al. ^(8f)				
1936-37	1,209	—	—	7.9
1938	976	—	—	2.2
1939	1,213	—	—	2.9

* It is not certain that the minimal reactions (consisting of a rise of temperature only) can be classed as true hemolytic reactions (8a).

result from non-specific causes such as dis-integrated cells, anticoagulants, improperly cleansed tubing, or "pyrogenic" contamination of blood. The latter two non-specific sources of reaction may be eliminated by technical care^(10, 11). Wiener^(8f) has reported a sharp drop in the frequency of all reactions (from 12.3 per cent to 3.8 per cent) upon institution of improved technique. Non-specific reactions, except for insulting the body, do not defeat the purpose of the transfusion. Thus, a chill and fever is not evidence of the destruction of the donor's cells in the recipient's circulation^(8f).

Refrigerated blood^(8a, b, e, 11, 12) does not cause a higher incidence of reactions. Refrigerated blood, if kept more than six to eight days, however, does not remain in the recipient's circulation as long as blood stored for shorter periods^(11, 12). In addition to the exposure to foreign surfaces and foreign media, the cells of stored blood continue to age and the proportion of effete cells increases^(13, 14). Whole blood kept longer not only fails to accomplish fully the intended

purpose, but taxes further the recipient's recuperative ability.

The practical importance of mild to moderate specific agglutination-hemolysis reactions may be emphasized by this finding: In an occasional case, the erythrocytes and hemoglobin first increase to the levels expected from the volume of blood transfused; then, in the course of a few hours or days they decrease, not to pretransfusion levels, but to levels lower than before^(15, 16, 17).

Even when the bloods of the recipient and donor have been accurately grouped and the usual cross-matching procedure indicates compatibility, it still is possible for specific hemolytic reactions to occur. Reactions developing under these conditions are for the most part *intragroup* reactions, so termed because the donor and recipient belong to the same group⁽¹⁷⁾. Also, agglutination may occur when the agglutinin subgroup A₁ is transfused into the presence of the anti-A₁ agglutinin; Wiener⁽⁹⁾ has reported two instances of reactions where subgroup A₁ acted as an antigen in subgroup A₂ individuals.

It is known that erythrocytes, irrespective of and in addition to the group characters, possess inherited antigenic characteristics which permit separation of bloods into types designated as M, N, MN, or P. Theoretically the injection of type M cells into a person of the same group but of a different type should induce the production of anti-M isoagglutinins; these isoagglutinins would induce the destruction of type M cells (same group) subsequently injected. Fortunately, the M, N, MN, or P characters, although antigenic in animals, have practically no antigenic activity in humans. Wiener^(3, 8f, 18) reports that in his experience reactions

10. Walter, C. W.: Symposium on Fluid and Electrolyte Needs of the Surgical Patient; Relation of Proper Preparation of Solutions for Intravenous Therapy to Febrile Reactions. *Ann. Surg.* 112:603-617 (Oct.) 1940.
11. Ehrlich, J. W.: Practical Operation of Preserved Blood and Pooled Plasma Program in the Suburban Hospital, New York State J. Med. 41:1737-1748 (Sept. 1) 1941.
12. Hoxworth, P., and Skinner, C.: Improvement in Blood Transfusion Service; II. Establishment and Operation of a Blood Transfusion Service. *Arch. Surg.* 42:480-497 (March) 1941.

13. Wiener, A. S., and Schaeffer, G.: Limitations in the Use of Preserved Blood for Transfusion; A Study of the Fate of Transfused Erythrocytes in the Recipient's Circulation. *M. Clin. North America* 24:705-722 (May) 1940.
14. Belk, W. P., and Barnes, B. C.: Survival Time after Transfusion of Erythrocytes of Clitrated Human Blood Stored at 1° to 6° C. *Am. J. M. Sc.* 201:838-841 (June) 1941.
15. Scott, J. E., and Conant, J. S.: Successful Transfusions Following a Previous Hemolytic Transfusion Reaction Due to Rh and Anti-Rh Factors. *Am. J. Clin. Path.* 11: 536-541 (June) 1941.
16. Wiener, A. S., and Peters, H. R.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group with Three Cases in Which the Same Agglutinin Was Responsible. *Ann. Int. Med.* 13:2306-2322 (June) 1940.
17. Wiener, A. S.: Hemolytic Reactions Following Transfusion of Blood of the Homologous Group; II. Further Observations on the Role of Property Rh. Particularly in Cases without Demonstrable Isoantibodies. *Arch. Path.* 32:227-230 (Aug.) 1941.
18. Wiener, A. S., and Forer, S.: A Human Serum Containing Four Distinct Isoagglutinins. *Proc. Soc. Exper. Biol. and Med.* 47:215-218 (June) 1941.

have been traced to the recipient's having been previously sensitized to factors M (4 cases) and P (1 case) and group 0 (1 case).

Another recently discovered human erythrocyte type character¹⁹, the Rh (so called because rhesus monkey blood was the original source of the antigen) possesses definite antigenic activity in humans in contrast to the types M, N, MN, or P. The detection of the Rh factor has been hindered by two peculiarities^{17, 20}: (1) The absence of, or irregular production of, isoantibodies to the factor in the usual laboratory animal, the rabbit; (2) the fact that the reaction between Rh-positive erythrocytes and human serum containing anti-Rh isoagglutinins takes place most favorably at low temperatures, or must be forced by a centrifuge technique. In spite of these *in vitro* peculiarities, the activity of *in vivo* agglutination-hemolysis is real.

Landsteiner and Wiener²⁰ have carried out a study of the frequency distribution of the Rh character in the blood of the general population. They report that the erythrocytes of 84.6 per cent of 472 white persons carried the Rh character, or were Rh-positive, and 15.4 per cent lacked the Rh character, or were Rh-negative. They report no apparent relation between the distribution of the Rh character and sex or the four blood groups; however, until larger samples are taken the conclusions may not be regarded as final. The 128 Negroes examined showed a significantly higher percentage of Rh-positive individuals (91 per cent). Examination of the Rh characterization of 60 families indicates that the character is transmitted as a simple dominant characteristic and is not sex linked. The observed distribution of the Rh character in the children of the families agrees essentially with calculations of the frequency to be expected on the basis of the parental 84.6-15.4 distribution.

Prior to 1939 about a dozen intragroup reactions had been reported, and it is likely that the Rh-factor was responsible for a part of these cases¹⁶. The remaining responsible isoagglutinins may be classified as "atypical" or "irregular", terms synonymous

with "rare and unidentified". In the very short time since identification of the Rh character, at least 15 cases of intragroup reactions have been reported in which the agglutination could be traced definitely to the Rh character¹⁷. The sequence of events as described by Wiener¹⁷ briefly is: An Rh-negative person is transfused with Rh-positive blood and there is no detectable effect although an anti-Rh titer is being developed. If a subsequent transfusion of Rh-positive blood is given, a hemolytic reaction is likely to occur. As with intergroup reactions, the severity appears to depend primarily upon the isoagglutinin titer of the recipient's plasma, the quantity of antigenic materials transfused, and the unpredictable capacity of the body to handle the reaction products.

Assuming that one person out of seven is Rh-negative and that the Rh characterization of neither donor nor recipient is known, the chances are 6 in 49 that the cells of a group-compatible donor would sensitize the recipient. If a recipient of such a random transfusion again is transfused after four to seven or more days, the theoretical chances of agglutination of the donated cells would be 36 in 343. Upon a third transfusion, the odds in favor of transfusing antigenic cells would increase slightly. If, however, the recipient is known to have an anti-Rh titer, the chances are always 6 in 7 that the cells of a donor chosen at random, but of the same group, would be antigenic. Although 84.6 per cent of the population are Rh-positive and are not capable of being sensitized, the remainder must be considered.

Since the frequency of reactions from all sources^{18, 19} is in practice less than the frequency expected from this single source, it is logical to suspect a bias. Possible explanations are: Variable Rh antigenic potency, variable capacity to produce the Rh isoagglutinin, and variations in specificity of the Rh factor^{16, 17, 20, 21}. In addition, a period of time is required for development of the Rh isoagglutinin titer, and the agglutinins tend to decrease and disappear with time^{13, 14, 21}. It is also suggested that some reactions written off as mild or moderate "non-specific" reactions may be ascribed to this specific source.

There is yet another source by which an Rh-negative person may be sensitized to the

19. Landsteiner, K., and Wiener, A. S.: An Agglutinable Factor in Human Blood Recognized by Immune Sera for Rhesus Blood. *Proc. Soc. Exper. Biol. and Med.* 43:223 (Jan., 1940).

20. Landsteiner, K., and Wiener, A. S.: Studies on Agglutination (Rh) in Human Blood Reacting with Anti Rhesus Sera and with Human Isoantibodies. *J. Exper. Med.* 74: 309-320 (Oct.) 1941.

21. Levine, P.; Vogel, P.; Katzin, E. M., and Burnham, L.: Pathogenesis of Erythroblastosis Fetalis: Statistical Evidence. *Science* 94:371-372 (Oct. 17) 1941.

Rh factor: An Rh-negative woman carrying *in utero* an Rh-positive fetus may develop an anti-Rh isoagglutinin titer sufficiently high to give an intragroup specific reaction at the first transfusion^(16, 17, 22, 23, 24), and apparently other not identified agglutinogens possess the same capacity to cause isoimmunization⁽²²⁾. On the basis of the 84.6 per cent Rh-positive and 15.4 per cent Rh-negative distribution given by Landsteiner and Wiener⁽²⁰⁾, the frequency of occurrence in all pregnancies of an Rh-positive fetus in an Rh-negative mother is calculated to be 7.92 per cent or 1 in 12.6^(25, 26).

If the sensitized mother is transfused with blood of the same group but not distinguished as to Rh character, the theoretical chances of a reaction are approximately 6 in 7 and would be the same for each subsequent transfusion. Here, also, it appears that the theoretical exceeds the actual clinical frequency. Because of the relatively high chances of occurrence of an Rh-positive fetus in an Rh-negative woman, and because the degree of sensitization can not be predicted, Wiener⁽¹⁷⁾, as a precautionary measure, now routinely employs only Rh-negative blood of the same group for postpartum transfusions. If Rh-negative blood is not available, donors of compatible blood are selected on the basis of direct cross-matches at refrigerator, room, and body temperatures, using the sensitive centrifuge technique.

This peculiar relationship between mother and child has taken on remarkable significance. Levine and co-workers⁽²¹⁾ have presented compelling statistical evidence that erythroblastosis fetalis (and its variants) develop from this antagonistic association. The extensive extramedullary erythropoiesis

as well as the jaundice⁽²⁷⁾ fit well with the concept of hemolysis of the Rh-positive fetal blood by the anti-Rh antibodies produced by the mother. A transfusion into the mother would require Rh-negative blood, especially if the child has a hematologic anomaly or if there has been a complication of pregnancy⁽²⁸⁾. The father's blood is likely to be unsuitable, for it probably is Rh-positive. Although the intimate details of the effect have not been worked out, there can be no doubt of the immunological relationship and the end results.

Levine and co-workers^(22, 23, 24) have called attention to the frequency of complications of pregnancy in cases where the above immunological relationship exists. Among the types of mishaps noted are toxic symptoms, miscarriages and abortions, and macerated fetus. At present, more informative or positive statements cannot be made. Future investigations of the immunological relation between mother and fetus, relative to the Rh and other antigenic components, must be analyzed on a statistical basis in order to demonstrate satisfactorily an etiologic connection with complications of pregnancy.

There have been no reports of the reversed situation: An Rh-positive (heterozygous) mother carrying an Rh-negative fetus. However, it is doubtful if Rh antibodies would develop, for the group isoagglutinins in some infants do not appear in full titer until about a year after birth⁽²⁹⁾.

Materials capable of inhibiting group isoagglutination recently have been isolated in relatively pure form from the secretions of normal human beings^(30, 31). It has been found that the saliva and gastric juice of about 80 per cent of normal persons yield extractable, heat-stable, carbohydrate-like substances which are group specific in action. Landsteiner and Harte⁽³⁰⁾ find their preparations active in dilutions up to 1:8,000,000. They note no significant differences in the preliminary chemical analyses of the extractives from salivas of persons of groups A, B, and O which would explain the sero-

22. Levine, P., and Katzin, E. M.: Isoimmunization in Pregnancy and the Varieties of Isoagglutinins Observed, *Proc. Soc. Exper. Biol. and Med.* 45:343-346 (Oct.) 1940.

23. Levine, P.; Katzin, E. M., and Burnham, L.: Atypical Warm Isoagglutinins, *Proc. Soc. Exper. Biol. and Med.* 45:346-348 (Oct.) 1940.

24. Levine, P.; Katzin, E. M., and Burnham, L.: Isoimmunization in Pregnancy; Its Possible Bearing on the Etiology of Erythroblastosis Foetalis, *J. A. M. A.* 116: 825-827 (March 1) 1941.

25. The calculation is based on the assumption of simple dominant genic transmission and would result from the mating: Rhrh or RhRh (Rh-positive father) X rhrh (Rh-negative mother). The chance frequency of such a mating would be 84.6×15.4 in 100^2 or 13.03 per cent. The chance occurrence of Rh-positive children would be 60.8 per cent of 13.03 per cent⁽²⁶⁾.

26. Copeland, D. E.: Personal Communication.

27. Vaughan, J. M.: *The Anemias*, ed. 2, New York and London, Oxford University Press, 1936.

28. Burnham, L.: Common Etiology of Erythroblastosis and Transfusion Accidents in Pregnancy, *Am. J. Obstet. and Gynecol.* 42:389-397 (Sept.) 1941.

29. Halbrecht, J.: Studies on Agglutinins and Agglutinogens in the Blood of the Newborn, *Brit. J. Child. Dis.* 37: 175-179 (July-Sept.) 1940.

30. Landsteiner, K., and Harte, R. H.: Group Specific Substances in Human Saliva, *J. Biol. Chem.* 140:673-674 (Aug.) 1941.

31. Wilebsky, E., and Klendshoj, N. C.: Blood Group Specific Substances and Blood Transfusions, *Science* 94:256-257 (Sept. 12) 1941.

logic specificities. Control analyses of the substances from the salivas of "non-secreters" are not reported. Although the exact chemical formulation has not been determined, we know that they contain hexosamine, reducing sugars, nonprotein nitrogen and ash. Levine and Katzin⁽³²⁾ report that the Rh antigen is not present in the saliva of Rh-positive persons.

The activity of the substances is demonstrated by the fact that erythrocytes added to an incubated mixture of the extracted substances (or even of saliva or gastric juice) and antiserum do not agglutinate^(33, 34, 35, 36). For example, a small amount of the carbohydrate extracted from a group B person is mixed with an anti-B isoagglutinin serum; when group B erythrocytes subsequently are added to the mixture, no agglutination occurs. These substances, which are highly potent in small amounts, are of value in using group O blood in a transfusion emergency⁽³¹⁾. The addition of a few milligrams each of A and B substances to group O blood inactivates the isoagglutinins alpha and beta. This procedure disposes of one of the objections to the use of group O blood as the universal donor—namely, the possibility that the isoagglutinin titer of the donor's plasma may be so high as to cause agglutination of the recipient's erythrocytes⁽³⁷⁾. Those who have disregarded this contingency have based their practice upon the reduction of isoagglutinin titer by dilution in the recipient's serum and "fixation" to the tissue cells which have the same agglutigen as the erythrocytes. Strauss and Levinson⁽³⁸⁾ have shown that *in vitro* the agglutinin titer decreases more rapidly when diluted with homologous serum than when

diluted with saline. Della Vida and Dyke⁽³⁹⁾ have reported that the decrease in the agglutinin titer of pooled plasma or serum is greater than can be accounted for by the dilution. They suggest that the explanation of this finding lies in the fact that the agglutinogens are common to most of the tissues of the body, including plasma and serum.

The findings of Wiener⁽⁴⁰⁾ and Witebsky and Klendshoj⁽³⁶⁾ suggest that the term "O" of group O indicates not the absence of an antigenic character, but a definite entity, albeit of low antigenicity.

More data and experiments are necessary before certain points may be accepted as fact. However, extension of knowledge growing into clinical application is possible only when it is known what research sequences are to be thoroughly explored.

39. Della Vida, B. L., and Dyke, S. C.: Absorption of Isoagglutinins from Pooled Plasma or Serum, *Lancet* 1: 561-565 (May 3) 1941.

FIVE PERFORATIONS OF A GASTRIC ULCER

A Case Report

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Recurrent perforation of peptic ulcers is a comparatively rare occurrence. The incidence is given by Pearse⁽¹⁾ as 0.69 per cent. The majority of the recurrences reported have been in the duodenum and the gastrojejunostomy stoma, and recurrent perforation of a gastric ulcer is extremely uncommon.

The present case is that of a young woman, now aged 23 years. She smoked an average of one pack of cigarettes daily and occasionally took a drink of whiskey. Her history began in November, 1936, when she experienced pain in the left shoulder, relieved in one week following extraction of a tooth. Subsequently she was in good health until April 16, 1937, five months later, when

32. Levine, P., and Katzin, E. M.: Pathogenesis of Erythroblastosis Fetalis: Absence of the Rh Factor From Saliva, *Proc. Soc. Exper. Biol. and Med.* 48:126-129 (Oct.) 1941.

33. Wiener, A. S., and Kosofsky, L.: Quantitative Studies on the Group Specific Substances in Human Blood and Saliva: I. Group Specific Substance B, *J. Immunol.* 11: 413-428 (Aug.) 1941.

34. Witebsky, E., Klendshoj, N. C., and Swanson, P.: Reduction or Elimination of the Anti-A Antibody in "O" Blood by Means of the Addition of the "A" Specific Substance, *J. Infect. Dis.* 67:188-192 (Nov.-Dec.) 1940.

35. Witebsky, E., and Klendshoj, N. C.: The Isolation of the Blood Group Specific B Substance, *J. Exper. Med.* 72:663-667 (Dec.) 1940.

36. Witebsky, E., and Klendshoj, N. C.: The Isolation of an O Specific Substance from Gastric Juice of Secretors and Carbohydrate-like Substances from Gastric Juice of Non-Secretors, *J. Exper. Med.* 73:655-667 (May) 1941.

37. Another objection is the possible presence in the recipient's plasma of the irregular A/2 agglutinin which is strongly active against group O cells.

38. Strauss, A. M., and Levinson, S. O.: Universal Blood and Heterogeneous Transfusions, *Am. J. Clin. Path.* 11: 766-770 (Oct.) 1941.

From the Surgical Service Hospital of the University of Pennsylvania, Philadelphia.

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1. Pearse, H. E., Jr.: Recurrent Perforation of Peptic Ulcers, *Ann. Surg.* 96:192 (Aug.) 1932.

the left shoulder pain recurred and lasted for three days. On the night of April 18, she had five drinks of whiskey and apparently suffered no immediate ill effects. At 10 a. m. on April 19 she had a sudden sharp pain in the left upper quadrant, which caused her to double up. The pain continued and her family physician sent her to the hospital. On physical examination she was found to be acutely ill but not in shock. The epigastrium and left upper quadrant were markedly resistant, and liver dullness was obliterated. Roentgen examination disclosed the presence of gas under the leaves of the diaphragm. A diagnosis of perforated peptic ulcer, probably duodenal, was made.

At operation a perforated ulcer was found, high up on the greater curvature of the stomach. The ulcer was closed with catgut and linen sutures, and the wound was drained.

The patient made an uneventful recovery, and a follow-up report showed that she had only slight postprandial epigastric discomfort. She remained on her diet as outlined, took Sippy powders occasionally, and did not smoke or drink. A gastro-intestinal roentgen examination three months later revealed no evidence of an ulcer. Gastric analysis was normal.

On November 22, 1938, at 7 p. m., five hours before her second admission to the hospital, she had a sudden sharp pain in the left shoulder, which soon became established in the left upper quadrant. It was not as intense as previously, but was sufficiently severe to require her to go to her family physician, who sent her to the hospital. Gas again was seen under the diaphragm on roentgen examination, the liver dullness was obliterated, and the abdomen was tender but not rigid. At operation another perforated ulcer was seen at the original location, and it was closed, this time with fine steel wire and linen. Drainage was not employed.

The patient was discharged from the hospital in excellent condition, and was put on the Long Island College Hospital diet. Two more gastrointestinal roentgen examinations failed to reveal a gastric ulceration.

On May 7, 1939, she had a recurrence of the pain in the left shoulder and slight pain in the right shoulder. Pain continued intermittently until May 9, 1939, when she again was admitted to the hospital. She had no severe abdominal pain but was frightened

because of her past experience. Physical examination showed no rigidity or tenderness of the abdomen, but there was obliteration of liver dullness. Gas was found under the diaphragm on roentgen examination. The leukocyte count was 7,000 per cubic millimeter and the patient did not appear ill. Therefore, conservative treatment was decided upon. The stomach was kept empty by means of the Wangensteen suction drainage, and intravenous fluids were given. The patient was placed in bed in the upright position, in order to allow the gastric juice to collect in the distal portion of the stomach and to prevent its discharge through the perforation high on the greater curvature. It seemed reasonable to assume that the identical area involved in the past two episodes was perforated again.

The patient recovered again without mishap. The gastric tube was removed on the fourth day after admission and a Sippy diet was started. She remained in the hospital for several weeks for the purpose of receiving concentrated grass juice, which has been reported to contain an anti-ulcer factor. Two more gastro-intestinal series were performed, and one showed the possibility of an ulcer on the greater curvature. Another gastric analysis was normal.

On August 12, 1940, the patient had a sudden pain in the left upper abdominal quadrant radiating to the left shoulder. The pain persisted for twenty-four hours and then diminished. On August 14, 1940, she was admitted again to the hospital, although the pain had ceased. She vomited once the day before admission but no blood was noted. She was then in the third month of gestation. On examination there was no abdominal rigidity or tenderness, but liver dullness was obliterated. The presence of gas under the diaphragm was confirmed by roentgen examination. The conservative treatment employed for the last perforation was again instituted, and recovery was even more rapid.

On October 12, 1940, the patient was seized again with a sharp pain in the left upper abdominal quadrant with radiation to the left shoulder. Her pregnancy had advanced to five months and was otherwise uncomplicated. The epigastrium was tender but soft, and liver dullness was obliterated. Roentgen examination showed gas under the diaphragm. Conservative treatment was em-

ployed and recovery was prompt and uneventful. She was discharged in excellent condition and was placed on the Meulengracht diet.

On February 2, 1941, the patient went through a normal labor and delivery. She vomited for a short while during labor, but there was no evidence of another perforation. The patient is now well.

No identical case has been discovered in the literature to date. Herten-Greaver⁽²⁾ reported three perforations of a gastric ulcer at the same site in a man 24 years of age, with simple closure each time. Lysaght and Williams⁽³⁾ described the case of a man 25 years of age who had a gastric ulcer that perforated four times at the same point. After the fourth perforation a subtotal gastrectomy was done. There are many scattered reports of perforations of the duodenum, and Henry⁽⁴⁾ described five perforations in the same person at different locations in the stomach, duodenum and gastrojejunostomy stoma.

In none of the reported cases has conservative treatment been administered when the diagnosis was made soon after the perforation. With respect to the last three perforations in our case, we wish to emphasize the reasons for not performing an operation: the location of the ulcer high on the greater curvature, the presence of adhesions from the previous operations and perforations, and the absence of marked clinical signs.

A question of great importance concerns the treatment of acute perforations of both stomach and duodenum. Although recurrence is rare one must always consider that possibility. Most authors agree that simple closure is the best method of treatment; gastrectomy may be done at a later period, if specific indications warrant it. If recurrence takes place, resection should be strongly considered. Gastrojejunostomy at the time of closure should be done only when obstruction exists. In our case, fundusectomy was indicated in order to remove the ulcer-bearing portion of the stomach. The pathogenesis of these perforations was apparently not related to gastric acidity, which was normal, nor to diet, which was strictly supervised.

PRIMARY ACUTE EPIPLOITIS

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Epiplitis means inflammation of the epiploon. The term epiploon is applied to the great omentum, the gastrocolic omentum, the gastrohepatic omentum, or any of the numerous epiploic appendages attached to the large intestines⁽¹⁾. Secondary inflammation of the omentum, called secondary epiplitis⁽²⁾, is very common, and may occur when the omentum is adjacent to a gangrenous appendix, or is caught in a hernial sac and strangulated, or injured in many other conditions not primary in the omentum itself. Another form of secondary epiplitis is that seen a few weeks or months following abdominal operations, when the patient complains of pain and the surgeon reopens the abdomen and finds an area of acute inflammation or even abscess formation where the omentum had been resected and ligated with catgut or other suture material⁽³⁾. This latter condition is not seen frequently, but is by no means rare.

Primary epiplitis is not common. The literature is only sparsely scattered with articles of any kind on primary epiplitis. Eliason and Johnson⁽¹⁾ of the University of Pennsylvania Hospital reported 13 cases out of 30,000 admissions to the General Surgical Service from 1922 to 1937, and all of the 13 cases were the result of torsion. In 1933 Schragger and Bergen⁽³⁾ of Chicago, in a detailed discussion of epiplitis of all kinds with particular emphasis on primary acute epiplitis, described a pseudotumor which was inflammatory in character and followed an abdominal operation. Adams⁽⁴⁾ in 1923, in the *Boston Medical and Surgical Journal*, reported a case of primary acute inflammation of the omentum which he felt was probably embolic in origin; this more closely approximates our cases than any others we have found in the literature.

From the Surgical Service of the Wilkes Hospital. Read before the Eighth District Medical Society, Mt. Airy, October 28, 1941.

1. Eliason, Eldridge L., and Johnson, Julian: Primary Acute Epiplitis, *Surgery* 6:68 (July) 1939.
2. Chatzkelson, B.: Abscess of the Greater Omentum, a Contribution to the Casuities of Idiopathic Epiplitis, *Wien. klin. Wchnschr.* 47:1001 (August 10) 1934.
3. Schragger, V. L., and Bergen, S.: Primary Acute Epiplitis, *Am. J. Surg.* 20:45 (April) 1933.
4. Adams, D. S.: Primary Acute Inflammation of the Great Omentum, A Case Report, *Boston M. and S. J.* 159:981 (Dec. 13) 1923.
5. Herten-Greaver, E. C.: Recurrent Perforation of a Gastric Ulcer in a Twenty Four Year Old Man, *Brit. M. J.* 1:1070 (May 22) 1937.
6. Lysaght, A. C. and Williams, W. B.: Repeated Perforation of a Peptic Ulcer, *Lancet* 1:809 (April 3) 1937.
7. Henry, C. K. P.: Recurrent Gastric Perforations, *Surg., Gyn. and Obst.* 32:542 (June) 1921.

The three following cases are reported in some detail.

Case 1

A white 65 year old married woman was admitted at 2:30 p. m., November 6, 1940, complaining of severe abdominal pain beginning suddenly the night before, accompanied by much nausea and vomiting. The pain was chiefly in the right side of the abdomen and had continued unabated from the onset. Her bowels moved the day before admission. The past history and family history were irrelevant. There had been no previous operations. Physical examination showed a well developed, slightly obese middle-aged woman perspiring freely. The positive findings were: a temperature of 100 F.; marked dental caries; moderate abdominal distention; generalized tenderness and muscle spasm, more marked on the right side. There were 25,000 white blood cells, with 31 per cent polymorphonuclears. A specimen of voided urine showed a specific gravity of 1.032, a trace of albumin, 3 leukocytes per high power field, and many hyalin and granular casts.

Because the diagnosis was not definitely established the patient was observed until the following morning, at which time the tenderness seemed more localized in the right abdomen. The leukocyte count was 23,000. The provisional diagnosis was gangrenous appendicitis. When the abdomen was opened an area of thrombosed vessels, necrotic tissue, edema and induration with moderate flaky exudate was found approximately 4 square inches in size in the gastrocolic omentum just to the right of the midline. Several hundred cubic centimeters of serosanguineous fluid was found in the right upper abdomen. The colon was carefully examined for diverticuli or other pathologic lesions, but none were found. The gallbladder, stomach and duodenum were normal. The appendix was removed, but appeared to be normal. A slight reaction in the parietal peritoneum overlying the diseased area was noted. A small section of the omentum was removed for microscopic study. The area seemed well defined, so a cigarette drain was placed over the area and the abdomen was closed. This patient developed a rather extensive wound infection and there was drainage for fifty-five days, at the end of which time she was discharged. She returned for

dressings during the next two weeks. The wound healed, and she has been well since. The pathological report of Dr. J. B. Bullitt of Chapel Hill was "Mild appendicitis. Inflammation of the omentum."

Case 2

A 40 year old white married man was admitted January 22, 1941, at 9:30 a. m. Two days previously, he began having colicky pains across the lower abdomen and in both inguinal regions which radiated upward beneath the ribs and through to the back. There was nausea, but no vomiting. The bowels moved regularly. The taking of liquids was followed by some pain. There was no previous history of any indigestion or gastro-intestinal disturbances of any kind. The past history and family history were irrelevant. Physical examination showed the temperature to be 99.4 F., the blood pressure 150 systolic, 100 diastolic; there was marked tenderness and rigidity across the upper abdomen. The leukocyte count was 13,000 with 84 per cent polymorphonuclears. Urinalysis showed a trace of albumin. The diagnosis was an acute surgical condition within the abdomen and probable peritonitis. On operation much thin, dark, blood-tinged fluid was found, and in the upper part of the great omentum there was a large indurated, reddened area about the size of a silver dollar, covered with white flaky lymphoid exudate. Several thrombosed vessels were seen. The appendix appeared quite red, as did the rest of the abdominal viscera covered by peritoneum, and the general appearance was that of a low-grade peritonitis. A small portion of the diseased omentum was removed. The appendix was removed and a drain was placed in the inflamed area of the omentum. The patient made an uneventful recovery. The drain was removed on the tenth day, there having been only a small amount of drainage at any time. He has been well since. The pathological report was: "Mild appendicitis. Necrosis of omental fat with leukocytic infiltration."

Case 3

A 32 year old white unmarried woman was admitted February 14, 1941, at 7:40 p. m. Three days previously she became nauseated about 3 p. m. She had colicky abdominal pain and vomited several times. The pain continued and increased in severity. She thought it was due to eating sauerkraut

and "hot dogs" at noon. She was given a purgative and two enemas and had a good evacuation. The day prior to admission she was seen at her home by a physician, and some tenderness was found in both the upper and lower abdomen, with moderate distention. She had no fever. She was given another enema with poor results. The pain continued throughout the day of admission, and the patient vomited all fluids taken.

The patient had had meningitis at 5 years of age. Epilepsy resulted and she had had severe grand mal attacks ever since, controlled partially by large doses of phenobarbital and dilantin. She had had an appendectomy and bilateral salpingectomy about seven years ago. Encephalograms had been made at Duke University Hospital, but no operative treatment was advised, as too much cortical degeneration was present. The family history was irrelevant. The menstrual periods were painful, but otherwise normal. Physical examination showed a well nourished young woman with anxious facies. The skin was bronzed, and there was much pigmentation. There was general abdominal distention of moderate degree, with marked tenderness in the epigastrium and to a lesser extent in the lower abdomen. Borborygmus was pronounced. The leukocyte count was 12,800, with 86 per cent polymorphonuclears. The urinalysis showed a 2 plus reaction for albumin, a red reaction for sugar with Benedict's solution, no acetone, the presence of bile, 3 leukocytes per high power field, and many hyalin and granular casts.

The patient was given 1000 cc. of normal saline intravenously. The following morning the blood sugar was 130 mg. per 100 cc.; the urine showed a green reaction with Benedict's solution; and the leukocyte count was 13,900. A definite diagnosis could not be made, but it was felt that exploration was indicated. While we were scrubbing for operation and again discussing possibilities, one of us remarked that since we had already had 2 unusual cases of epiploitis this might very well be the third which was almost certain to come sooner or later.

At operation, we found thrombosis of the vessels of the gastrocolic omentum with marked inflammatory reaction and lymph deposits involving a wide area, including part of the great omentum. There was a large amount of dark, blood-stained fluid in the peritoneal cavity. There was cystic degeneration of the right ovary, but no other

pathologic lesions. A small section of the diseased omentum was removed for microscopic study, and the abdomen was closed with drainage.

The patient had a rather stormy course for several days, with several severe convulsions, tympanites, vomiting, and finally a perirectal abscess which drained spontaneously. Her mental outlook was poor. The pathological examination of the omental tissue removed showed necrotic changes and a few zones of moderate leukocytic reaction composed of large monocytes, small round cells and a few polymorphonuclears.

Conclusions

1. Acute primary epiploitis of embolic origin is very uncommon.

2. It is impossible to make a pre-operative diagnosis of this condition, and hazardous to attempt it; for while these cases would probably recover without surgery, any attempt at conservative treatment would probably mean overlooking a badly diseased appendix or some other equally important surgical condition requiring intervention.

3. In none of our cases could a previous operation have had any relation to the present illness; in two of the cases there had been no previous operations, and in the third case an interval of seven years had elapsed.

4. Whether the inflammation preceded the thrombosis or vice versa, we cannot say. It has been suggested by one author that the condition is due to an infarction.

5. This condition constitutes a definite disease entity.

Prevention of Hemorrhage in Peptic Ulcer.—Severe hemorrhage . . . does not often develop in the patient who is on a proper ulcer regimen. I do not believe that I have observed a hemorrhage of significant severity in a case under adequate treatment, except when the patient has been subjected to some unusual emotional strain or after some other digression from his routine of management. Prevention, therefore, is largely a matter of keeping the patient on his ulcer program.—T. Grier Miller; *The Management of the Complications of Peptic Ulcer*, New England J. Med. 224:402 (March 6) 1941.

The General Treatment of Ulcer Patients.—It is equally important for the ulcer patient as well as the tuberculous patient to develop a philosophical attitude, to conquer his natural tendency to fret and worry and to avoid excessive responsibilities and undue nervous and physical strain. He must at the same time appreciate the necessity of a change in his habits of eating, give up alcohol and tobacco, if addicted, and acquire a fixed and leisurely routine of life.—T. Grier Miller; *The Management of the Complications of Peptic Ulcer*, New England J. Med. 224:401 (March 6) 1941.

GENERALIZED EXFOLIATIVE ERYTHRODERMA FOLLOWING ATABRINE: REPORT OF A CASE

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and

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Atabrine⁽¹⁾, a substituted alkyl amino derivative of acridine, was introduced by Schulemann⁽²⁾ in 1930 for the treatment of malaria. In 1933 Mauss and Mietzsch synthesized atabrine dihydrochloride. Since the introduction of atabrine therapy there have been reported relatively few instances of allergic reactions to this drug, and skin manifestations of hypersensitiveness to the drug have likewise been unusual.

Nayudu⁽³⁾ observed 2 cases of giant urticaria in 187 patients under atabrine treatment. The patients gave no history of previous cutaneous eruptions and the lesions disappeared in twenty-four hours without treatment. Storey⁽⁴⁾ reported toxic exanthems not unlike those of typhus fever in one case during a course of several weeks of atabrine therapy. These disappeared completely four days after the drug was discontinued.

Although examples of skin hypersensitivity to atabrine are certainly suggested by some reports, it is well to know that dermatological manifestations may occur in malaria *per se*. Davis⁽⁵⁾ reported a generalized bullous eruption thought at first to be hemorrhagic smallpox complicating a case of tertian malaria, which healed promptly following atabrine medication. Among the cutaneous manifestations which have been reported to occur with malaria are urticaria⁽⁶⁾, erythema nodosum⁽⁷⁾, and gluteal

herpes⁽⁸⁾. No instance of exfoliative dermatitis following atabrine administration has been recorded to our knowledge. The following case is presented as an example, we believe, of generalized exfoliative erythroderma due to atabrine.

Case Summary

A 45 year old white married female enjoyed good health until April, 1941. At this time she noted the onset of generalized malaise and drowsiness with some increase in weight. Two months later, because of chills and fever, and without consulting her physician, she took a course of atabrine consisting of .1 Gm. three times daily for five days. The day following completion of the course of atabrine, she noted increase in malaise plus polyarticular pain, cephalgia, and marked weakness, although her fever had disappeared. Only then did she consult her physician, who discovered glycosuria and hospitalized her. After a week's hospitalization, she was discharged on regular insulin, five units before each meal. Two weeks later she again developed fever. Her blood at this time revealed plasmodia. She was given a second course of atabrine, 0.1 Gm. three times daily for approximately six days. Her temperature promptly returned to normal. A "few days" after completion of this second atabrine course, the patient noted generalized pruritus with a feeling of thickening and soreness of her skin generally. Shortly thereafter, she developed generalized edema with oliguria. A week later she was admitted to Duke Hospital and came under our observation for the first time.

Questioning revealed a familial history of diabetes mellitus. The patient said she had had asthma at the age of 5, but had had no recurrence. She thought she was somewhat sensitive to tomatoes, strawberries, blackberries, and grapes. There was no history of arsenical medication.

On admission the physical findings were as follows: The patient was a well nourished white female in rather acute distress and scratching continuously. There was generalized edema and thickening of the skin over

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6. (a) Baier, D. R.: Malaria, Its Complications and Treatment, Tri-State M. J. 8:1378 (Jan.) 1936.
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7. Fass, R. S.: Erythema Nodosum of Malarial Origin, Klin. Med. 14:1869, 1936.
8. Sequeira, J. H.: Gluteal Herpes and Malaria, Brit. J. Dermatol. 45:425 (Oct.) 1933.

her entire body with some redness, oozing and exfoliation, and with extensive excoriation due to scratching. There was no evidence of secondary or mycotic infection. The tonsils were enlarged and hyperemic. Otherwise the physical examination was negative.

Accessory clinical findings on admission showed a hemoglobin of 10.8 Gm. (70 per cent). The red cell count was 4,120,000. The white blood cell count was 18,650. The differential formula revealed 19 per cent segmented polymorphonuclear neutrophils, 3 per cent stab forms, no juvenile forms, 60 per cent eosinophils, 1 per cent basophils, 5 per cent monocytes, no large lymphocytes, 12 per cent small lymphocytes. The urine was negative except for a 1 plus reaction for sugar and a 2 plus reaction for acetone. The fasting blood sugar was 177 mg. per 100 cc.; the total proteins were 3.7 mg. per 100 cc.—albumin 1.6 mg., globulin 2.1 mg., with an albumin-globulin ratio of .76. A twenty-four hour urine specimen showed no arsenic. The nonprotein nitrogen, Van den Bergh reaction, plasma carbon dioxide combining power, cholesterol, chlorides, and roentgen examination of the heart and lungs were all within normal limits.

Patch tests to a saturated aqueous solution of atabrine dihydrochloride resulted within six hours in the formation of an exquisitely painful vesicular ulcer-like lesion with a surrounding area of erythema 7 cm. in diameter. Following the patch test the patient had an exaggerated feeling of malaise similar to that experienced twice before following atabrine therapy, and there was an exacerbation of the cutaneous eruption. Similar control patch tests to atabrine on a normal subject were negative after twenty-four and forty-eight hours.

The patient's hospital course was quite stormy, with violent pruritus, generalized edema, oliguria, insomnia, and restlessness. So grave did her condition appear that for several days after admission her recovery seemed doubtful.

With diabetic regulation, heavy sedation with chloral hydrate and paraldehyde, the use of calamine liniment, olive oil, starch baths, aluminum acetate compresses, glycerite of tannin and other supportive measures, the patient began to improve after two weeks in the hospital. She was discharged after having been hospitalized a total of four weeks. At this time she felt well and her skin was almost completely normal.

The patient was seen again four months after discharge, at which time her skin was quite normal and the diabetes was entirely controlled through diet regulation without insulin. At this time the patient was again given patch tests with atabrine and also with regular insulin, phenobarbital, aspirin, nembutal, and seconal. These drugs constituted the only internal medication taken before hospitalization. After twenty-four hours atabrine produced a vesicular lesion with 1½ cm. of surrounding erythema. Patch tests to the other drugs were negative after twenty-four and forty-eight hours. Control patch tests on normal subjects were negative.

Summary

A case is presented in which a patient with diabetes mellitus developed generalized exfoliative erythroderma due, we believe, to atabrine medication. This theory of etiology was supported by the history and by strongly positive patch tests on two separate occasions, control patch tests being negative.

THE COORDINATION OF PUBLIC HEALTH NURSING SERVICES WITH OTHER SERVICES IN A GENERALIZED PROGRAM

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GREENSBORO

The coordination of public health nursing services into a generalized health program presents a number of questions: First, is there a need for such a program? Second, is it of value to the community? Third, how can it be done?

In planning any health program in a community there are a few fundamental principles that we must keep in mind. One is the fact that the official health department is the logical authority on community health matters, and the health officer is the leader. Another is the importance of citizen participation in the program planning. Years of experience have proved that the organization that is started and carried on by a representative community group is the one to survive and achieve permanence. Public health nursing, to become the powerful

agency for community good of which it is capable, requires the backing of a group of men and women who are respected and trusted by their fellow citizens. It needs also the interpretation of the objectives and possibilities of the work which such a group will give to the public.

Since the need and value of the coordination of all public health nursing services into a generalized program have been the topic of much discussion for the last few years, my opinion alone would not be worth much to this audience. I will, however, bring to you the opinion of one with whom I thoroughly agree—Surgeon General Thomas Parran. In a paper read at the American Public Health Association meeting in New York in 1937 he said:

"The introduction of the principle of the generalized service, in my opinion, was as important to public health nursing as the introduction of radium in the treatment of cancer. We must certainly make the citizen members, and sometimes the doctor, in our public health team understand that the family health program must not be dismembered by a series of specialists each attacking as separate problems school health, infant welfare, tuberculosis, communicable disease, nutrition, bedside care, and a dozen matters which are of importance to the well being of the family as a unit. Moreover, I believe we could go farther than most generalized programs have gone, that we could and should wipe out the lines of demarcation between the public health nurses who restrict themselves rigidly to conversation and demonstration and the visiting nurses who care for the sick and attempt to educate by example as well as by precept. It seems to me that a next and needed step is for health departments to provide community nurses who will have responsibility both for prevention and for bedside care, as needed. Public health nurses had their beginnings in the care of the sick poor. In many places nowadays they have swung so far in the opposite direction that they are of no earthly use to the sick poor. Suppose we get back to the middle of the road and combine both the concrete and the educational functions of a nurse in one valuable person. Let the community nurse be the answer to St. Paul's exhortation of 'all things to all men.' It is a large order but she has filled large orders before and done it nobly."

I hope that you all agree with Dr. Parran

that the generalized public health nursing program is the only program for a community and that the public health nurse *is* and *should* be the community nurse. The next question is how such a program can be set up. Since the Greensboro Nursing Council was one of the first organizations in the United States to coordinate its public health and bedside nursing services into a generalized program—a program which has worked beautifully—I am going to give you the history of its development.

The Greensboro Nursing Council grew out of a program which originated in church work. In Greensboro a group of humanitarian women formed an organization known as the District Nurse and Relief Association. This association employed a nurse to do bedside nursing for the sick poor. They also opened a small house for the care of tuberculous patients, and raised a fund for milk and ice to be supplied to the infants of the needy. From the interest, efforts and vision of these women have grown the Guilford County Sanatorium, the Greensboro Nursing Council and a milk fund for children and infants.

In 1924, with Dr. C. C. Hudson as health officer and instigator of the plan, the city of Greensboro, the Board of Education, the Metropolitan Life Insurance Company, and the District Nurse and Relief Association decided, after a careful study, that by combining their efforts they could have a more powerful and efficient organization and could save expense and duplication. Prior to this date there were four different organizations doing public health nursing in Greensboro. This was an expensive program for each organization and resulted in friction and duplication. Often the school nurse, the health department nurse and the district nurse would have occasion to visit the same home in one day, leaving the family entirely bewildered. With the decision of these various leaders to combine their efforts and pool their resources, the Greensboro Nursing Council was organized.

This organization is governed by a Board of Directors consisting of two representatives from each of the four organizing groups, two representatives from each of the other community agencies interested in public health, and three members at large appointed by the president. With the help of Dr. Hudson, the health officer, and Mrs. Lambe, the supervising nurse, this board

adopted policies and functions for the organization which were approved by the City Council, the Board of Education, the District Nurse and Relief Association, and the Metropolitan Life Insurance Company. This Board of Directors holds regular bimonthly meetings throughout the year. It is divided into standing committees, such as the finance, nursing and volunteer committees. Today the Nursing Council is still operating as a combined official and non-official agency, receiving financial support from the City of Greensboro, the Greensboro Community Chest, and the Metropolitan Life Insurance Company, and fees from patients who are able to pay for bedside care.

We now have thirteen nurses employed—eight white and five colored. The city has been divided into eleven districts and a nurse has been placed in each. She is expected to carry out a complete public health nursing program, except for home delivery service. Her functions are to teach family health by interpreting the principles of healthful living; to give skilled nursing care to the sick in their homes and teach someone in the home to give care; to supervise the health and habits of the school child, cooperating with the physician, the school, and the parents in the control of communicable disease and the correction of physical defects; to give nursing care during pregnancy and care to the mother and newborn infant after delivery; to supervise the infant and preschool child through home visits and conferences; to teach and demonstrate the prevention and control of communicable diseases, including tuberculosis, syphilis and gonorrhea, by clinic participation and home visits.

Public health nursing is closely related to the activities of several other professions and of many community organizations, and cannot be carried on successfully as an isolated service. We believe that the more closely it is coordinated with these related and cooperating agencies through the constant sharing and interchange of ideas and service, the more soundly and economically will it fulfil its purpose.

The success that the generalized public health nursing service has had in Greensboro is due, I believe, to its sound origin with the health officer as its official head; to the cooperative relationship between the Board of Directors, the health officer and

the nursing supervisor; to the adoption of definite policies and functions for the staff nurses; and to the support received from other community agencies.

We know that the success of public health work in a community depends upon the standing of the health organization which promotes it, upon its sincerity of purpose, and upon the preparation and qualifications of the health official and the cooperation which he receives from the entire staff. Every health department has many employees—inspectors, clerks and others who are concerned with routine activities. These are the people who can be of the greatest value in promoting the program or who can destroy the sincere efforts of the health officer and his best workers. Realizing the importance of this, the New York Health Department has a course of training for all employees, including the janitor, the telephone operator, the stenographers, and the inspectors, as well as the nurses and supervisors. Each has his responsibility for the interpretation of the health department's work in the community, but the greatest asset or liability to the health officer is the nurse. Dr. Haven Emerson has said, "Without the public health nurse, the health officer would be as a man deaf, dumb and blind in relation to the public he must lead to health." Can we as public health nurses face and meet this responsibility? Are we prepared for a generalized program? What about the orthopedic patient, the home delivery service, the cardiac patient, the increasing prevalence of diabetes, the emphasis on syphilis, the ever-increasing importance of nutrition, the new conception of school health work—and what, if there is no bedside nursing, is to become of the chronic patient, who is now the responsibility of no one, not even the family?

The family is still the unit for which all public health agencies must work. The nurse is the natural interpreter, teacher, and friend. The care she gives at the bedside is the key to the heart, to the confidence of the family. What she tells them they believe, for she has shown them both her skill and her knowledge.

I quote from an article in the *Public Health Nursing Magazine*: "The nurse is the key to the whole great structure of our health services. Granted that money is essential and methods of coordination must

be worked out; the service to human beings is the actuality, and that is the work of the individual nurse. She should be a happy, healthy person with a desire to serve her fellow beings. She must be intelligent, for the actual knowledge she must have at her command increases with each fresh discovery in medicine, each change in community methods. Her basic preparation should challenge every phase of her being. We may have the happiest cooperation with all community agencies, we may have coordinated our work with that of venereal disease, cancer, school. All of these may be in our structure but if the nurse is not of the highest caliber, if she is inadequately equipped, we cannot function."

Can we, as public health nurses, meet these changes in our field and accept our responsibilities? I think we can.

A NOTE ON THE USE OF HISTAMINASE IN PREVENTING IVY DERMATITIS

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Since the specificity of a histamine inactivating substance was demonstrated, much interest has centered about the clinical application of this principle to the treatment of allergic disorders. Histaminase⁽¹⁾, as the inactivating substance is known, has been reported to be effective in relieving the symptoms of numerous allergic states. Because of these reported successes it was determined to investigate the effect of the drug in preventing the cutaneous reaction following the exposure of susceptible individuals to poison ivy.

As a preliminary study 8 subjects, all of whom had had ivy dermatitis the previous summer, were observed for a period of ten days in a summer camp. The area about the camp was full of poison ivy and it was practically impossible to escape exposure. Four of the 8 subjects were given 45 units of histaminase daily and the remaining 4 were used as controls. During the ten day period 2 of those who had not received the

drug developed ivy dermatitis, one rather extensively. Of the 4 receiving histaminase none developed dermatitis during the period of observation, although one subject developed a 3 cm. area of vesicles two days after the drug was discontinued. Two subjects, assumed to be susceptible because they had had dermatitis the previous summer, deliberately exposed themselves to the plant after taking 45 units of histaminase daily for ten days. Neither developed lesions. In all instances the drug was taken by mouth.

Because of this preliminary success it was decided to continue the study on a larger scale. A group of 35 campers were observed for a period of twenty-five days in the same camp used in the preliminary work. Of the 35 subjects 9 admitted susceptibility to poison ivy, having had dermatitis the previous summer. These 9 campers were each given 45 units of histaminase by mouth daily for the twenty-five day period. The remaining 26 subjects did not receive the drug and were used as controls. One of the campers receiving histaminase developed diarrhea twenty-four hours after the first dose was given, and was excluded from the study.

Of the 8 subjects receiving histaminase only one developed dermatitis—a 2 cm. area on the knee. Among the 26 campers not receiving the drug there were 13 individual cases of ivy dermatitis during the twenty-five day period. For the most part the cases were mild and the dermatitis restricted to one area, but in several cases the lesions were extensive. Except in inclement weather all campers were dressed in shorts and athletic shirts, and the possibility of exposure to the plant was, in general, the same for all.

Four subjects, all susceptible by history, deliberately exposed themselves by rubbing the plant into the skin after taking 60 units of histaminase daily for ten days. Two developed lesions and 2 did not.

Increasing industrialization has been accompanied by a decline in mortality from tuberculosis, probably because of the general improvement in standards of living for the bulk of the people brought about by industrialization. Density of population itself does not determine the mortality from tuberculosis but there is some causal factor probably connected with crowding and social environment. For the time being at least the level of mortality from tuberculosis may be considered an index of hygienic and social culture. By this standard the United States ranks first among the world states even when the high mortality of the Negroes is included. Geo. Wolff, M.D., *Amer. Rev. of Tuberc.*, July, 1940.

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1. The histaminase for this study was supplied by the Winthrop Chemical Company.

THE USE OF COBRA VENOM IN THE TREATMENT OF OSTEITIS DEFORMANS

Report of a Case

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HIGH POINT

Osteitis deformans (Paget's disease of the bones) is a chronic, painful, incurable disease. Christian, in the thirteenth edition of Osler's *PRINCIPLES AND PRACTICE OF MEDICINE*¹, states that sedatives may be required to relieve the pain. Osteitis deformans, however, often runs such a prolonged course (not uncommonly twenty to thirty years) that adequate relief by the usual sedatives or analgesics may be difficult and dangerous.

Report of a Case

In April, 1939, I saw a patient who was suffering severe pain because of osteitis deformans, and decided to make a trial of cobra venom as advocated for other chronic painful diseases by Macht². This is, to my knowledge, the first report on the use of cobra venom in this intractable, painful condition.

The patient, a 58 year old white widow, a resident of another state, consulted me on April 30, 1939, while she was on a visit in High Point. She complained of severe pain in the vertex of her head and in the right temporal region. She had noted severe pressure in her head at night for two years. This pain usually disappeared when she got up in the morning. Her trouble apparently began in the mandible, and was recognized first by her dentist, when she consulted him because her dental plate would not fit. He sent her to the Temple University Hospital, where she was studied exhaustively for a period of more than three weeks. She was told that she had Paget's disease of the bones. The day before coming to me, she had pain in her head off and on all day, as well as at night. Her spine hurt her considerably, and she had noted that she was four inches shorter than she had been two years before. She suffered pains all over her body which were supposed to be due to

arthritis. For two years she had had a tremor of her right arm, the left being very slightly affected. She had great difficulty in getting a hat that would fit her.

Her past history was unimportant except that in 1920 she had had an attack of epidemic encephalitis, with very severe insomnia and delirium which was said to have lasted about eighteen months. Her habits were good, and her family history threw no light on her condition.

Physical examination gave the following findings: height 4 feet, 11¼ inches; weight 129½ pounds; temperature 98.9 F.; pulse rate 84; respiratory rate 20; blood pressure 140 systolic, 60 diastolic. Her head was large, with prominent frontal bosses, and there were tortuous temporal arteries. There was tenderness over the posterior end of the right zygoma just in front of the ear. She had a full upper dental plate and a partial lower plate. The neck was normal. The clavicles and ribs were very greatly thickened. There was a musical high-pitched systolic apical murmur transmitted to the axilla, but no other abnormal findings were detected in the heart. The lungs were normal. The spine showed a kyphotic curving, rather than an angulation. It was not tender. The abdomen was normal. The femurs were thickened and bowed obliquely. The tibiae were thickened, but bowed only slightly. There were varicose veins of moderate size in the lower extremities. There was marked thickening and bowing of the distal portions of the left radius and ulna. The corresponding bones on the right were much less involved. There was a marked static tremor of the right arm, a very slight one of the left. There were no signs of pyramidal tract involvement.

The patient was put on cobra venom according to the technique of Macht², one-half ampule (2½ mouse units) being given subcutaneously at the first dose, followed by a few daily doses of 1 ampule (5 mouse units) each. At this time she returned home and I was unable to follow her case further, but I sent a note to her physician suggesting that he continue the cobra venom at gradually lengthening intervals if it seemed to give adequate relief.

In 1940 the patient returned to High Point for another visit, and I saw her on March 9, 1940. She stated that she had taken the cobra venom twice a week for a

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1. Christian, in Osler's *Principles and Practice of Medicine*, ed. 13, New York, D. Appleton-Century Co., 1938.
2. Macht, D. L.: *Therapeutic Experiences With Cobra Venom*, Ann. Int. Med. 11:1924 (April) 1935.

number of doses, then once a week for several months. She obtained so much relief that she stopped taking it about Christmas time, 1939, and the pains had not been sufficiently severe to necessitate resumption of it since that time. She described her former pains as a feeling as if something exploded in her bones—sudden tearing pains—but she had not had any of such severity since the first few doses of venom. At Temple they had proposed giving her some “x-ray treatments in the neck” (parathyroids?), but the relief from the venom was so great that this treatment was not used.

A telephone call to a relative April 25, 1942, revealed that the patient's condition is essentially unchanged. During the past year she took about a half dozen doses of cobra venom because of a little pain, but found it unnecessary to continue medication as relief was prompt.

Summary and Conclusions

A case of osteitis deformans with very severe pains is described in which marked relief followed the administration of cobra venom according to the method of Macht⁽²⁾. Relief was obtained from the first few doses, and thereafter a few semi-weekly doses followed by weekly doses for about six months kept the patient comfortable. After that time treatment was discontinued temporarily, and only a few doses of venom have been required to keep the patient comfortable for two years. In this case, cobra venom apparently was the best treatment available, and the results would seem to justify its trial in other cases of osteitis deformans.

The First Symptom of Appendicitis.—The first symptom of appendicitis is pain, always pain—never anything else. If some other symptom is first, the appendix is blameless. The site and severity of the pain is not constant, but pain comes first.—William J. Carrington: Differential Diagnosis of Acute Lower Abdominal Lesions in the Female, *J. M. Soc. New Jersey*, 38:504 (Sept.) 1941.

Appendicitis and Measles.—It is embarrassing to operate for appendicitis and find the mesenteric adenitis of what turns out to be measles. But once in a while pain, McBurney tenderness, rigidity, fever and leukocytosis antedate the rash. When the surgeon is called to see such a case he knows that appendicitis in childhood demands early operation because nature makes no effort to wall off the infection. He operates in good faith. Give him sympathy. He will blush for himself.—William J. Carrington: Differential Diagnosis of Acute Lower Abdominal Lesions in the Female, *J. M. Soc. New Jersey*, 38:504 (Sept.) 1941.

APHORISMS

Collected by

FREDERIC M. HANES, M.D., DURHAM

Medical knowledge often lends itself to aphoristic statements, never perhaps wholly true, but frequently amusing and stimulating. The following small collection is made up of direct quotations and of paraphrases, credit being given where the origin is known.

Life is short, the Art long, Opportunity fleeting, Experience treacherous, and Judgment difficult.—*Hippocrates*.

As to Diseases, make a Habit of Two Things—to Help, or at least to do no Harm.—*Hippocrates*.

If Disease and Treatment start together, the Disease will not win the Race.—*Hippocrates*.

More Mistakes are made by not Looking than by not Knowing.—*Jenner*.

The Art of Medicine is largely the Art of Noticing.—*J. A. Ryle*.

Diagnostic Errors are more often due to Laziness than to Ignorance.

Learn by the Experience of Others; your own may come too late.

A Man will talk much of his Experience, and make the same Mistake every day.

Never Catheterize in Spinal Cord Injuries: Shooting is more Humane!

The Urinary Bladder does not rupture spontaneously.

Simplicity and Clearness are the Eloquence of Science.—*Macaulay*.

One Thing the Consultant can always do that has not been done—a Rectal Examination.—*Osler*.

Chance favors the prepared mind.—*Pasteur*.

Listen attentively to the Patient; He has lived with his Disease longer than you have.

Diathesis, Idiopathic, Essential—Words which not only Cover but Conceal.

Law says: “If it's Old it's Sacred.”

Medicine says: “It it's Old it's probably Wrong.”

The Observer listens to Nature; the Experimenter forces Her to unveil Herself.—*Cuvier*.

When People see a Man absurd in what They understand, They conclude the same of Him in what They do not understand.—*Dr. Johnson.*

Blood means Cancer—until You're sure it doesn't.

Always examine the Exact Spot of which the Patient complains.—*E. P. Hanes.*

The Life Line varies inversely with the Waist Line.

The Greeks had a word for High Living: Hyperpiesis.

Not all Headaches are due to Cerebral Tumor—but more than you think.

The three P's of Spinal Cord Tumor: "Pain, Paresthesia and Paresis".

Restrain your Passion for saying Something when there is Nothing to say.—*Dr. Johnson.*

Blood in the Sputum should make You think of Something besides Epistaxis.

The Tuberculous Patient who has a Hemorrhage, and is alive when the Doctor gets there, will not die of the Hemorrhage.—*D. T. Smith.*

Foul Sputum means Fusospirochetosis.—*D. T. Smith.*

The Patient with extensive Lung Disease and little Sputum has Tuberculosis.—*D. T. Smith.*

Lung Infarcts occur most often in orthopedic Patients.

The three F's: Fat, Fifty and Funeral.

Snap Diagnoses are like Gold Plating—shiny but shallow.

An Absolute Diagnosis is Dangerous: it closes the Avenue to further Thinking.

A Diagnosis is not a Procrustean Bed: the Facts can't be stretched or cut to fit it.

The Diagnosis must fit the Facts like a Glove.

Unless the Diagnosis gives You an inner glow of Satisfaction it is probably wrong (N. B. Some observers glow more easily than others).

All Diagnoses are provisional and subject to change without Notice.

Diagnosis is to Disease what Harmony is to Music: any Discord is fatal.

When the Proper Technique is patiently pursued the Diagnosis makes Itself.

Without a correct Diagnosis Therapy is blind and often harmful.

The Threads of all the Sciences are woven into the Fabric of the Clinic.

"Amebic Dysentery", which does not yield promptly to Adequate Therapy, is not Amebic Dysentery.

A sick Doctor and a litigious Lawyer are equally pathetic.

The three L's of Longevity: Low weight, Low pulse rate and Low blood pressure.

Diagnosis by intuition is a rapid method of arriving at a wrong conclusion.—*J. C. da Costa.*

A SURGEON'S PRAYER IN WARTIME

God of Battle, grant that the wounded may swiftly arrive at their hospital haven, so that the safeguards of modern surgery may surround them, to the end that their pain is assuaged and their broken bodies are mended.

Grant me as a surgeon, gentle skill and intelligent foresight to bar the path to such sordid enemies as shock, hemorrhage and infection.

Give me plentifully of the blood of their non-combatant fellow man, so that their vital fluid may be replaced and thus make all the donor people realize that they, too, have given their life's blood in a noble cause.

Give me the instruments of my calling so that my work may be swift and accurate; but provide me with resourceful ingenuity so that I may do without bounteous supplies.

Strengthen my hand, endow me with valiant energy to go on through day and night; and keep my heart and brain attuned to duty and great opportunity.

Let me never forget that a life or a limb is in my keeping and do not let my judgment falter.

Enable me to give renewed courage and hope to the living and comfort to the dying.

Let me never forget that in the battles to be won, I too must play my part, to the glory of a great calling and as a follower of the Great Physician. Amen.

Christmas Night, 1941.

John J. Moorhead, Col., M.C., in Hawaii M.J.

1:157 (January) 1942.

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MAY, 1942

HATS OFF TO HAWAII

The most interesting medical journal that has come to this desk in a long time is Number 3 of the first volume of the *Hawaii Medical Journal*. Although the publication date given on the cover is January, the *Journal* did not arrive until the middle of April. The explanation is given in the first editorial:

"The delay in the publication of this issue of the *Journal* is due in part to the pressure of activity following the events of December 7th which delayed the preparation of material by the authors and in part to the necessity for securing permission from the office of the Military Governor for continuance of publication. That permission was finally received on January 15th. . . ."

The whole issue breathes the spirit of American medicine at its best. The first page of reading matter is headed "War Came to Hawaii", and briefly retells the story of the Pearl Harbor tragedy. Provisionally Dr. John J. Moorhead had gone to

Hawaii on December 4 to give an intensive postgraduate course in treating war injuries. Never were lessons better timed. Following the first three lectures in the *Journal*, there is the heading "Burns", under the date of Sunday, December 7, 9 a.m., and two sentences of explanation:

"Dr. Moorhead had barely started to lecture on the subject of burns when the call came for surgeons to go immediately to Tripler Hospital. He joined the twenty or thirty civilian physicians who started out immediately."

The next heading, dated December 11, is "Retrospect". It is the report of a "Meeting of the Honolulu County Medical Society to review the experiences of the 7th and to present, with Dr. Moorehead as spokesman, uniform rules and regulations for the treatment of certain types of cases, adopted by the special committee."

Besides the lectures by Dr. Moorhead, there are other articles devoted to various phases of military medicine. Even obstetrics is given two articles, one reporting a case of eclampsia precipitated by the attack on Pearl Harbor, the other entitled "Obstetrics During Major Disaster." As Dr. Schattenburg writes in his preface to the latter, "The stork pays no heed to international affairs and does not discriminate between war and peace."

One of the most informative reports in the *Journal* was that of the Clinical Laboratory on the experience with blood plasma during the emergency. This is full of such practical observations as the following: that "merthiolate. . . in 1:10,000 concentration has practically no inhibitory effect" on bacterial growth, and that "If plasma be made from blood in a minimum of time at a minimum of temperature, preserved frozen, and melted at 37 degrees, it is usually clear and may be administered as is. *Plasma made under any other condition must be filtered*—first, to keep from plugging the needle, and second, to keep from plugging the recipient's pulmonary capillaries."

A dramatic story of the Honolulu Blood and Plasma Bank is told by its director, Dr. Forrest J. Pinkerton. He first tells of how "wounded men . . . very evidently marked for death . . . still live because of the life-giving plasma poured back into their veins." Then he tells an even more dramatic sequel to this story.

"A call for donors was broadcast over local radio stations and the response was overwhelming. From a previous maximum of 8 donors a day, 4 days a week, volunteers were now being bled at the rate of 50 an hour, 10 hours a day, 7 days a week. This continued over a period of 2 weeks. Every available doctor and nurse was enlisted to assist. . . .

"Men and women waited in line for hours. Soldiers stood their guns with fixed bayonets in the surgery hallway and rolled up their sleeves and helped; sailors gave their few precious hours of liberty to wait their turn. Mothers asked strangers to hold their small children and took their turns on the surgery tables. Civilian defense workers from Pearl Harbor, and workers from Red Hill, red eyed from long hours of welding, stopped by to donate before snatching a few hours rest. The whole crew and passengers from a Dutch ship came in a body to help their American allies, then hastened back to their boat to journey across a perilous sea.

"A crew of husky iron workers in their oily work clothes came en masse; whole crews from dry docks and inter-island steamships; the dock workers and society folks waiting in line side by side to do their part. Sugar and pineapple plantation employees came direct from their work in the fields. . . .

"The question most commonly asked was 'How soon can I come again?'"

In contrast to the pitiful unpreparedness of the army and navy officials at Pearl Harbor was the attitude of the medical profession. In response to a radiogram sent from the Office of Civilian Defense in Washington on December 9, urging that emergency field units be established as soon as possible, the Honolulu County Medical Society was able to reply that their first emergency field unit was demonstrated on April 4 (Army Day): that since then 18 such units with 120 personnel each had been trained and set up throughout the City of Honolulu; and that within an hour or less after the attack these 18 units went into action and 100 trucks were rolling to the scene of combat.

This JOURNAL, speaking for the doctors of North Carolina, wishes to express admiration for the way in which the doctors of Hawaii lived up to the highest traditions of our profession. They have kept the faith, and their example should inspire us.

"SOCIAL SECURITY MEDICINE"

The *New York Times* has certainly never championed the cause of organized medicine against those who would like to see the political medicine of Europe substituted for the American system. When the Social Security Board, however, advocated a payroll tax of one per cent to provide hospital care for all workers, the *Times* was forced to gag at the proposal. In an editorial entitled "Social Security Medicine" (March 22) this paper voiced a fervent protest on the ground that "it seems certain that standards would fall. What we have here is a form of compulsory health insurance, to which the best medical and economic opinion is opposed. . . . An excellent beginning in solving the problem of medical care has already been made by the American Hospital Association. . . . Promising experiments are now being made with plans that include the cost of medical and surgical services, with the result that beneficiaries receive fully twice as much for their money as they would under the Social Security Board's plan."

The weekly magazine *Look* (April 7) published an interview with Wendell Willkie in the form of a catechism. Eighteen questions dealing with current events were answered bluntly and honestly. For the most part the answers were calculated to encourage the average citizen to cooperate with the administration. Question 7, however, was: "Do you see any sign that the New Dealers are trying to put over a social and economic revolution while national attention is diverted to the war?" The answer was: "Yes, the attempt is still going on to a certain extent. That is one reason it is so hard to get into the war program the force and drive that come with united effort toward a single end."

The under-cover attempt to take advantage of the national emergency and of the medical profession's preoccupation with its part in the defense program to fasten upon the country political medicine in its most objectionable form strongly corroborates Mr. Willkie's statement. Write your congressmen and senators a protest against such a nefarious act, and urge your patients and friends to do likewise.

HEMOGLOBIN AND PLASMA PROTEINS

The blood plasma contains about seven grams of protein in each one hundred cubic centimeters. This circulating protein, composed of albumin and globulin, has several very important functions, a knowledge of which is of daily practical use to clinicians. An albumin fraction, prothrombin, is essential to blood coagulation, and vitamin K is a necessary stimulus to its formation.

A reduction of a few grams of protein in each hundred cubic centimeters of plasma—hypoproteinemia—results in very striking objective evidences of disease, the most common of which is generalized edema; for water balance in the tissues is controlled in large part by the osmotic “pull” exerted by the molecules of protein in the capillary blood plasma. When the proteins of the plasma fall to about five grams per one hundred cubic centimeters, the “edema level” is reached, and fluids may pass into the tissues in large amounts.

Plasma proteins should not, however, be regarded as inert colloids which can be replaced by colloids like acacia, for they furnish the vital proteins for cell metabolism. The evidence is that the albumin molecules pass directly through the cell membranes for metabolic use. The cells of the body, especially those of the liver, furnish in turn proteins to the blood, resulting in what Whipple¹ has called a “dynamic equilibrium” of plasma proteins.

Hypoproteinemia is truly a “deficiency state”, whether it is due to undernutrition or to loss of albumin from chronic wounds, or from the kidneys, as is seen in the nephrotic phase of glomerulo-nephritis.

A great part of what accurate knowledge we possess of plasma protein formation, as well as of hemoglobin production, is due to the tireless work of Dr. George Whipple and his associates, and the article cited above should be read by every thoughtful physician. The pioneer work of Whipple upon the influence of diet on hemoglobin formation influenced Dr. George Minot in his discovery of the liver treatment of pernicious anemia, and both of these distinguished investigators received a Nobel prize for their truly admirable scientific work.

NOSTRUMS AGAIN

Within the memory of men not yet senile patent medicines were sold almost exclusively to the laity through the medium of newspaper advertising. Fantastically expensive campaigns of high pressure advertising made Peruna, and other worthless nostrums, household remedies. Such crude sales methods have gradually disappeared; for the manufacturers discovered that it was easier to sell their pseudo-scientific nostrums through the agency of the physician himself. Today every physician's mail is filled with highly ornate and expensive “literature” vaunting the merits of compounds which the physician could easily prescribe himself, were he not too indolent or careless.

The clever use of half-truths, purveyed under the guise of “scientific” writing, with worthless, but imposing bibliographies, convinces the physician who doesn't wish to think, that he is prescribing intelligently for his patient. That this technique succeeds is evidenced by the ever increasing number and expensiveness of such publications.

A glaring example of such impudence is furnished by the thoroughly misleading brochures of the Dios Chemical Company advertising bromides. Their last booklet bears the impressive but idiotic title, “Research on Bromide Synergism”. The publication plainly states that it is the bromide ion that has a sedative action, and yet “synergism” is supposedly obtained by using a combination of sodium, potassium and ammonium bromide! Such ignorant quackery would not deserve intelligent notice, except for the fact that the technique that obviously sells “Neurosine” is being used, more or less flagrantly, to make of the physician the willing tool of the nostrum vendors.

There are honest pharmaceutical manufacturers, and to these only are the pages of the NORTH CAROLINA MEDICAL JOURNAL available. It is highly desirable that every physician should adopt the same critical attitude towards the remedies he prescribes.

1. Whipple, G. H.: Hemoglobin and Plasma Proteins: Their Production, Utilization and Inter-Relation. *Am. J. M. Sc.* 208:477 (April) 1942.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

C. K., a 30 year old Negro man, was admitted to the Kate Bitting Reynolds Memorial Hospital because of dyspnea and edema on March 7, 1942, and died in less than forty-eight hours.

On admission his chief complaint was shortness of breath, which was so severe that he was scarcely able to talk. His present illness was of approximately four years' duration, and had begun with an attack of "acute nephritis" accompanied by high blood pressure, edema and blood in his urine. There had been exacerbations of these symptoms yearly which lasted about one month. The present episode, however, began six months ago with swelling of the ankles and hands, and later of the abdomen. Twenty-four hours before admission he became dyspneic and when finally seen in the emergency room he was markedly orthopneic.

His past history revealed no scarlet fever or symptoms of rheumatic fever, and no sore throat or tonsillitis. He had had no operations or other serious illnesses. The family history was not elicited.

Physical examination on admission revealed a stocky, well developed Negro, markedly dyspneic and lying in a high Fowler's position. There was marked generalized edema of the trunk and extremities. His temperature was 99.5 F., his pulse 80, his respirations 24, and his blood pressure 156 systolic, 96 diastolic. Examination of the head revealed nothing significant. There was slight bilateral proptosis. The neck veins were not seen to be engorged, because of the short, thick neck. The chest was symmetrical. The lungs were full of moist rales. The heart sounds were not well heard. The abdomen was distended, and there was tympany in the upper portion and dullness in the flanks. Examination the following morning revealed essentially the same findings. The heart was enlarged to the left, the sounds were slurred and distant, and the rhythm was regular with a clear gallop. A fairly rough systolic murmur was heard at the apex. No murmurs were heard at

the aortic region. The pulmonic second sound was relatively increased. The blood pressure was 142 systolic, 110 diastolic. Moist rales were heard throughout the lung fields, but the breath sounds were definitely diminished over the whole left chest anteriorly with dullness on percussion. Tactile fremitus and voice sounds were likewise decreased. The impression was gained that there was fluid in the left pleural cavity and in the abdomen. The liver edge was not palpable, owing to the distention.

On admission the urine was cloudy, amber, and acid with a specific gravity of 1.016, a 4 plus reaction for albumin and a negative reaction for sugar. There were 22 white blood cells and innumerable red blood cells per high power field, 9 granular and 3 hyaline casts. A blood count on March 9 showed 3,490,000 red blood cells, 10 Gm. of hemoglobin and 18,450 white blood cells with 88 per cent granulocytes. On March 9 the non-protein nitrogen was 82 mg. per 100 cc., the creatinine 3.5 mg., total proteins 5.4 mg., albumin 1.8 mg. and globulin 3.6 mg. His blood Kline test gave a 1 plus (doubtful) reaction.

On admission 560 cc. of blood was drawn off. The next morning, after receiving oxygen throughout the night, the patient appeared in much less distress. He had received morphine, 4 ampules of digalen, and 50 cc. of 50 per cent glucose intravenously. At this time his temperature was 101 F., his pulse 88, and his respirations 32. After twenty-four hours he rapidly became comatose, with weak, rapid pulse and shallow, irregular respirations. He had received the equivalent of 13 grains of digitalis. In desperation, thoracentesis was attempted and about 10 cc. of pinkish fluid was obtained from the pericardium. No fluid was obtained from either the pleural or peritoneal cavities. He died shortly afterward.

Discussion

DR. J. C. P. FEARRINGTON: The history of an acute kidney attack four years ago, with hematuria, fever, and high blood pressure; the orthopnea and present laboratory and physical findings lead me to believe that we are dealing with a chronic glomerular nephritis of four years' duration, resulting in hypertension and the development of heart failure and passive congestion.

DR. W. L. GRIMES: Would he have that much fever with kidney damage?

DR. J. C. P. FEARRINGTON: No. I think that is a secondary finding due to chronic passive congestion of the lungs.

DR. S. S. MILES: With a long standing chronic passive congestion can you get reversal of the albumin-globulin ratio?

DR. J. C. P. FEARRINGTON: Yes.

DR. S. S. MILES: The blood pressure in cases of hypertension sometimes goes up terminally.

DR. J. C. P. FEARRINGTON: This man's blood pressure apparently went down as a result of left cardiac hypertrophy, dilatation and failure with subsequent passive congestion and dropping of the peripheral circulation. Right heart failure then occurred.

DR. C. H. MAUZY: How about the treatment? In acute failure would you not try to digitalize during the first twenty-four hours?

DR. J. C. P. FEARRINGTON: Thirteen cat units is enough to digitalize a man weighing 130 pounds. We do not know how much this man weighed.

DR. S. S. MILES: We did not weigh him. He was too sick to be moved around in bed.

DR. MAUZY: Is not the specific gravity high for a chronic nephritis?

DR. FEARRINGTON: It is too high.

DR. T. T. FROST: He has a high polymorphonuclear count.

DR. GRIMES: How do you account for that and his fever?

DR. FEARRINGTON: He did not have fever until the second day. He probably had a hypostatic pneumonia and congestive failure. I take it for granted that hypostatic pneumonia was the terminal cause of death.

DR. GRIMES: Why did he go into coma so quickly?

DR. MILES: It looked like a case of progressive heart failure.

DR. GRIMES: Is there elevation of temperature with an acute nephritis?

DR. FEARRINGTON: Yes.

DR. GRIMES: Perhaps the red blood cells in his urine resulted from an acute nephritis.

DR. FEARRINGTON: I think they were due to the passive congestion.

DR. GRIMES: Do you have hematuria in passive congestion?

DR. FEARRINGTON: I think there are two conditions in the kidney—a chronic glomerular nephritis and superimposed passive con-

gestion at the last. Both conditions might cause red blood cells in the urine.

Clinical Diagnosis

Chronic glomerular nephritis.

Hypertension.

Cardiac decompensation.

Dr. Fearrington's Diagnosis

Cardiac hypertrophy, dilatation and failure due to glomerular nephritis, of four years' duration, and subsequent passive congestion from cardiac failure.

Anatomical Diagnosis

Cardiac hypertrophy and dilatation.

Mural thrombi—right auricular appendage and apex of the right ventricle.

Endocardial sclerosis.

Chronic passive congestion of the lungs.

Pulmonary infarction.

Pulmonary edema.

Nutmeg liver.

Anasarca.

Pathological Findings

DR. T. T. FROST: At autopsy the edema described clinically was still present. There were only a few hundred cubic centimeters of fluid in the abdomen, 100 cc. of fluid in the left thorax, and 200 cc. in the right. There was a small needle puncture wound in the anterior surface of the heart and a slight amount of blood clot in the pericardial cavity. The heart weighed 800 Gm. and showed marked hypertrophy of both ventricles, but predominantly of the left. The valves were all perfectly normal. The endocardium of the left ventricle showed a very marked fibrous thickening throughout the apical portion, and the trabeculae were largely converted into fibrous bands. There was a small mural thrombus in the apex of the right ventricle and a mural thrombus in the right auricular appendage. The cardiac muscle on transverse section showed several small reddish areas of acute degeneration and small areas of scarring, but these areas were not large or widespread. There was enough dilatation of the valvular rings to have produced any sort of murmur. The coronaries showed some degree of intimal fibrosis but no great reduction in the size of their lumen. Microscopically the thickened endocardium in the left ventricle was found to be composed of slightly cellular, dense,

fibrous tissue without any evidence of inflammatory reaction, either past or present. There were scattered infarcts in both lungs and there was marked hematogenous pigmentation of the right lower lobe, which microscopically showed a large number of heart failure cells in the alveoli and lymphatics. The liver was a typical nutmeg liver and microscopically showed wide distention and thickening of the central veins with little normal liver parenchyma except immediately around the portal spaces. The kidneys together weighed 300 Gm. and were normal in size and appearance. A slight degree of fetal lobulation was present. Microscopic examination of numerous sections of the kidneys revealed that practically all of the glomeruli were essentially normal without any thickening of the basement membrane or of Bowman's capsule, or lobulation of the tufts. An occasional glomerulus was transformed into a fibrous ball. There was no increased cellularity of the tufts and no adhesions between the tufts and Bowman's capsule. The tubules showed a rather severe degree of cloudy swelling with granular material in their lumina and an occasional hyalin cast. There was moderate passive congestion visible in the veins between the collecting tubules. The arterioles showed a definite but slight sub-intimal thickening which was rather uniformly distributed throughout the kidney. An occasional small band perpendicular to the cortex showed fibrosis of some of the glomeruli and more marked thickening of the arterioles, but by a very conservative estimate at least 90 per cent of the glomeruli were perfectly normal. The section of the adrenal seemed to show some hyperplasia of the cortical layers, in which the cells were rather deeply staining and appeared much more prominent than normal. Whether this has anything to do with the high blood pressure I will not say. The renal arteries showed some intimal fibrosis but not enough to cause any marked reduction in blood flow to the kidneys. There was no evidence of any type of obstruction in the excretory portion of the urinary tract. The prostate was not enlarged and the bladder was thin-walled and lined by a smooth, glistening mucosa. The thyroid and the pituitary were not examined, but in the clinical picture which this man presented there is no evidence of either hyperthyroidism or basophilic adenoma of the pituitary.

This case is extremely interesting because of the typical picture of acute glomerular nephritis followed eventually by chronic glomerular nephritis, hypertension and cardiac failure, and the absence of any but incidental findings in the kidneys. An occasional case of hypertension is reported in which there are no lesions in the kidneys, but this is distinctly against the rule. The reversal of the albumin-globulin ratio in this case may probably have been due to the marked passive congestion of the liver which prevented the normal elaboration of albumin. The hyalin casts and the red cells found in the urine may be considered a result of the passive congestion of the kidneys caused by the failing myocardium. This condition in the kidneys also explains the pulmonary edema, passive congestion of the lungs, the nutmeg liver and the accumulation of fluid in the serous cavities.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Divorce: An insane person sued for divorce who has no general or testamentary guardian must defend by guardian ad litem. This provision must be strictly observed.

In this case the plaintiff, the husband, obtained an absolute divorce from his wife in September, 1938, on the grounds of two years' separation. The divorce was granted upon authority contained in Consolidated Statutes 1659 (a), which is as follows: "Two years separation; either party. Marriages may be dissolved and the parties thereto divorced from the bonds of matrimony on the application of either party, if and when the husband and wife have lived separate and apart for two years, and the plaintiff in the suit for divorce has resided in the state for a period of one year." It is quite difficult to understand why the above amendment would authorize a divorce from an insane person, especially when the separation is brought about involuntarily as a result of the act of an insane mind or when the patient is committed to a hospital for the treatment of a mental illness and there spends the statutory period of two years confined against his or her will. It is apparent that this would be taking an unfair advantage of a person and penalizing the person for being in a condition for which he is in no way responsible. However, this is only a personal opinion and beside the point, inasmuch as this case is being cited in order to show that certain protection must be afforded a person non compos mentis when called to answer in court, regardless of the nature of the litigation. Especially is this true in suits for divorce. In the event that the provisions with reference to this protection are not strictly observed the resulting judgment may be set aside.

In July, 1939, the attorney for the defendant, the wife, filed a motion to set aside the decree of divorce, alleging that at the time the action for divorce was instituted and the service of summons

was made upon the defendant she was insane, a fact well known to the plaintiff, and that she was not represented by a next friend or guardian *ad litem*, as required by law. This motion was heard before a judge of the Superior Court at chambers in October, 1939, and was dismissed because of failure to allege that the movant had a meritorious defense. Subsequently a next friend was appointed to represent the defendant in further proceedings, and a new motion was made to set aside the divorce. This motion was based on fraud and imposition on the court by the plaintiff in procuring the decree, since he knew that his wife was insane and had been for some time. The fact of her insanity and the failure to have appointed any guardian *ad litem* to represent her in the proceeding was also set up. This motion was heard before another judge of the Superior Court in September, 1941, and after finding certain facts relative to the alleged insanity of the wife at the time the suit was instituted and relating to the merits of the defense, this judge rendered judgment setting aside the decree, whereupon the plaintiff appealed.

When the case came on to be considered before the Supreme Court the Justice agreed with the lower court that the proper method to attack an irregular judgment such as this was by motion, and he made the following additional remarks: "Our procedure requires certain means of protection to be afforded a person, non sui juris, or non compos mentis, when called to answer in court. Some of them relate to service of process, and nonobservance may result in a void judgment; others relate to the protection to be afforded them by representation in the proceeding, and nonobservance may result in a judgment either void or merely irregular. The statutes require that an insane person, having no general or testamentary guardian, shall defend by guardian *ad litem* and authorizes the court to appoint such guardian. It is said by the courts that the provisions of this statute should be strictly observed. In *Moore v. Gidney*, 75 N. C. 34, 38, the provisions are said to be mandatory, and not directory only. 'Those who venture to act in defiance of them must take the risk of their action being declared void or set aside.'" The judgment setting aside the decree of divorce by the trial judge in this case was affirmed by the Supreme Court, the Court basing its opinion on the record, the evidence and the findings of fact made by the trial judge. It should perhaps be mentioned that one of the facts found in the trial of this case was that of insanity of the defendant, and while this was not the sole reason for setting aside the decree of divorce it was apparently one of the causes and in the absence of the others might have been sufficient to result in the same decision. (*North Carolina Supreme Court*, vol. 221, p. 19. Decision rendered spring term 1942.)

Incidence of Syphilitic Meningitis. — Syphilitic meningitis is a relatively rare complication of syphilis, occurring in less than 0.5 per cent of the cases, and since emphasis has been placed on the value of arsenic in the treatment of early syphilis, the condition is now a clinical rarity. I have never seen it develop in a patient while receiving regular treatment with one of the arsenicals, but it was not an uncommon experience for the symptoms to have their onset while the patient was supposedly taking mercury rubs at home.—H. Houston Merritt, M.D.: *The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System*, New England J. Med. 223:447 (September 19) 1940.

MILITARY MEDICINE

ANNOUNCEMENTS FROM THE OFFICE OF CIVILIAN DEFENSE

Hospitals To Be Reimbursed for Care of Civilian Casualties

Payment for temporary hospitalization of civilians injured as the result of enemy action has been made possible by a recent agreement between Administrator Paul V. McNutt of the Federal Security Agency and Director James M. Landis of the Office of Civilian Defense. The funds have been allocated to the U. S. Public Health Service by the Federal Security Administrator from funds made available to him from the President's emergency fund. A joint memorandum embodying the details of the program has been issued by Surgeon General Thomas Parran of the U. S. Public Health Service and Dr. George Baehr, Chief Medical Officer of the Office of Civilian Defense.

The plan provides that all hospitals caring for civilian casualties in the event of air raids or other enemy action will be reimbursed by the Federal government at a rate of \$3.75 a day. This is the rate of reimbursement established by the Federal Board of Hospitalization for Federal beneficiaries in government hospitals and may be changed as conditions require, it was stated.

Any hospital in the nation, voluntary or governmental, may be used as a casualty receiving hospital in the Emergency Medical Service established by the Medical Division of the Office of Civilian Defense. In addition, certain hospitals and other institutions in "safe areas" may be used as emergency base hospitals for casualties or other patients whom it may be necessary to evacuate from urban hospitals in exposed areas. The new agreement provides that Federally owned equipment may be loaned to the base hospitals and that their staffs will be supplemented by physicians of the region who will be commissioned in the reserve corps of the U. S. Public Health Service. It was emphasized that management and control of all hospitals, both local casualty receiving hospitals and emergency base hospitals, will remain the responsibility of the local or state authorities.

In the establishment of emergency base hospitals, emphasis will be placed on the relative safety of the area and the availability of existing hospitals and other institutions. Hospitals are now being surveyed for this purpose and will be classified on a basis of size, equipment, and standards of operation.

It is proposed to begin immediately the organization of medical staffs for future base hospitals as hospital units affiliated with casualty hospitals similar to the affiliated general hospitals of the Army. The physicians, surgeons, specialists and dentists who are to be commissioned in the Public Health Service Reserve for service in these hospitals will receive rank, pay and allowance equivalent to those of the Medical Corps of the U. S. Army. They will be selected from older age groups, from physicians with disabilities that make them ineligible for military service and from women physicians. As far as possible, they will be assigned to service in the regions in which they live. Because they are to function as balanced professional staffs, they will be recruited from the staffs of civilian hospitals and cleared through the Procurement and Assignment Service.

Plan to Establish Blood Banks

Hospitals in communities exposed to war hazards may receive assistance in the establishment of a blood and plasma bank through funds available to the United States Public Health Service, which will be administered by it through the Medical Division of the United States Office of Civilian Defense. In addition to providing whole blood or liquid plasma for the current needs of hospitals, these blood banks as well as others already in operation are to accumulate a reserve supply of plasma for civilian casualties caused by enemy action. Technical and bacteriological safeguards are to be observed as recommended by the Subcommittee on Blood Substitutes, Division of Medical Sciences of the National Research Council. At the request of the Office of Civilian Defense, a technical handbook on blood and plasma banks has been prepared by this committee, which will be distributed by the Office of Civilian Defense to hospitals.

State Hospital Officer

Appointment of a state hospital officer as an official of Emergency Medical Service has been recommended by the Medical Division for densely populated states in the target areas. These areas are principally in the First, Second, Third, Fourth, Eighth and Ninth Defense Regions.

The principal function of the hospital officer will be the planning of emergency base hospitals for the reception of civilian casualties and other hospital evacuees. An official memorandum sets forth his duties as follows:

1. To survey the hospitals throughout the State (excluding those in the exposed cities) to determine how many beds can be put into immediate use in emergency with existing kitchen, laundry, sanitation and other engineering facilities,
 - (a) by clearing patients to their homes
 - (b) by restricting admissions
 - (c) by use of room not normally used for patients
 - (d) by rehousing medical and nursing staff and other hospital personnel outside the hospital
 - (e) by use of neighboring buildings (schools, hotels, etc.) for patients (or staff)
 - (f) by extra bed accommodation in temporary structures erected on available grounds adjacent to the hospital.
2. To assist in designating for each casualty hospital or group of hospitals in each exposed city,
 - (a) the line of evacuation to the base
 - (b) the transport arrangements
 - (c) the emergency base hospitals provisionally allotted to each casualty unit.
3. To keep constantly informed of the bed state of every hospital in his area by weekly returns.
4. To advise the Office of Civilian Defense, through the Regional Medical Officer, on the need for providing additional accommodations, e.g., by temporary construction or by converting convalescent homes, hotels, school dormitories or other structures into hospitals.
5. To report to the Regional Medical Officer of the Office of Civilian Defense any exceptional conditions requiring action (e.g. beyond state boundaries, or required by the needs of the military situation) and to forward to him copies of a monthly summary report on the State's emergency hospital program. Where a hospital outside a State boundary is readily

accessible for the reception of casualties from an exposed city, this fact should also be noted.

6. To maintain constant touch with the other service departments of the State Defense Council (e.g. evacuation, etc.).
7. To supervise the distribution of medical and hospital supplies under the direction of the State Civilian Defense Property Officer and report any threatened deficiency to the Regional Medical Officer.
8. To supervise staff arrangements for emergency base hospitals and for reception areas.
9. To control movements of medical and nursing staff, as well as of casualties in any situation affecting emergency base hospitals.

The hospital officer must work in close collaboration with the state evacuation authority, the memorandum points out. In addition, he may find it necessary to collaborate with the state officer in charge of institutions for the care of mental patients, if such hospitals are to be used as emergency base hospitals for the reception of casualties and other patients evacuated from urban hospitals. Transport arrangements are to be handled in collaboration with the evacuation authorities of the state and the military authorities of the area.

Chemical Warfare Course

Twenty-five physicians from the First, Second and Third Defense Regions attended a special course on "Medical Aspects of Chemical Warfare Agents" at the University of Cincinnati College of Medicine, February 23-26, inclusive, under the auspices of the Medical Division of the Office of Civilian Defense with the cooperation of the Chemical Warfare Service of the U. S. Army. It is expected that the class will be repeated for physicians of other regions in the coming months.

New Publications

"Protection of Hospitals," Bulletin No. 3 of the Medical Division of the Office of Civilian Defense, prepared in collaboration with a special committee of the American Hospital Association, has now come from the press in its official form. It was previously published in several hospital journals in order that the material could be used by hospitals at the earliest possible moment.

The bulletin discusses protection of hospitals against air raids under the following heads: Protection of building fabric, patients and personnel; protection of glass; ventilation; protection against fire; rescue squads; air raid shelters; blackout regulations; protection of utilities; facilities for care of casualties; unit system and reserve stocks; the ambulance entrance; morals; distribution of casualties to wards.

Campaign for Diphtheria and Smallpox Immunization

The Office of Civilian Defense, at the request of the Children's Bureau of the U. S. Department of Labor, is cooperating with the Conference of State and Provincial Health Authorities of North America and the Children's Bureau in promoting a campaign for the immunization of children against diphtheria and smallpox. In a memorandum to Regional Officers, the Director of the Office of Civilian Defense directed Regional Medical Officers and Assistant Regional Directors in charge of Volunteer Participation to urge state and local medical defense officials to support the health officers in their communities in this activity as a measure for wartime protection of the civil population.

Appointments and Staff Changes

Dr. Thomas B. McKneely, Past Assistant Surgeon in the U. S. Public Health Service, has been assigned to the Medical Division, Office of Civilian Defense, by the Surgeon General of the U. S. Public Health Service to assist in the organization of emergency medical services throughout the United States.

Mr. Daniel Williams Evans, senior sanitary engineer, Farm Security Administration, U. S. Department of Agriculture, has been appointed to the staff of the Sanitary Engineering Section of the Office of Civilian Defense. It is expected that he will be assigned to the Fourth and Eighth Civilian Defense Regions.

Mr. Evans is commissioned in the U. S. Public Health Service Reserve.

Dr. Burt A. Dyar, regional medical officer for the Farm Security Administration with headquarters in Indianapolis since September 1939, has been appointed Regional Medical Officer for the Fourth Civilian Defense Region. His headquarters are in Atlanta.

Dr. Judson D. Dowling, recently Regional Medical Officer in the Fourth Region, has been assigned to the States Relations Division, U. S. Public Health Service.

Dr. Wallace D. Hunt, Regional Medical Officer for the Ninth Civilian Defense Region with headquarters in San Francisco, has been transferred to Omaha, Nebraska, as Regional Medical Officer of the Seventh Region. Dr. Leonard A. Scheele of the headquarters staff in Washington is acting Regional Officer in the Ninth Region.

of this District with a view to their application as Medical Officers of the Army of the United States. This District includes the two states of North and South Carolina.

The Army requires the services of approximately twelve thousand Medical Corps Officers and the need is urgent. The greatest proportion of these officers will be taken from the age group under 45 years, and appointments in the various specialties of medicine will be available.

The following is the general procedure for application, and further details may be obtained at any District Recruiting Office. These forms, dealing with training and experience, must be filled in by the applicant, these forms being obtained from the above mentioned stations. Also, a final type physical examination must be obtained from a Board of army medical officers and the completed papers then will be sent to the Headquarters, Fourth Corps Area at Atlanta, Georgia.

Any communications concerning this subject should be addressed to Medical Officer, Charlotte Recruiting District Headquarters, Post Office Building, Charlotte, North Carolina.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS

Two new members have been added to the Central Committee for the Procurement and Assignment Service for Physicians in North Carolina. They are Dr. E. S. Boice of Rocky Mount and Dr. H. D. Walker of Elizabeth City.

DECONTAMINATION OF EYES AFTER EXPOSURE TO LEWISITE AND MUSTARD

Since publication of the Office of Civilian Defense handbooks, "First Aid in the Prevention and Treatment of Chemical Casualties" and "Protection Against Gas," further experience has shown that the 2% solution of hydrogen peroxide recommended for the treatment of eyes following Lewisite burns may be injurious if used undiluted. The Chemical Warfare Service now recommends a single instillation in the eyes of a 0.5% solution of hydrogen peroxide as soon as possible after contamination with Lewisite. This solution may be prepared by diluting one part of a 2% solution with three parts of water, or one part of a 3% solution with five parts of water. The solution usually found in drug stores is the U. S. P. strength of 2.5 to 3.5 per cent hydrogen peroxide. A 0.5% solution of potassium permanganate has also been found effective as an eye instillation following exposure to Lewisite.

In planning decontamination stations, the Medical Division, Office of Civilian Defense, recommends that provision be made near the entrance of the second or shower room for the irrigation of the eyes of contaminated persons. The schematic sketch of a decontamination station in the Office of Civilian Defense publications mentioned above shows the irrigation of eyes in the dressing room, whereas this should be carried out in the second or shower room before the bath is given. Delay until the casualty reaches the dressing room will result in more serious injury to eyes which have been contaminated with mustard or Lewisite.

ANNOUNCEMENT FROM THE CHARLOTTE RECRUITING AND INDUCTION DISTRICT

The Headquarters, Fourth Corps Area, at Atlanta, Georgia, has requested the Medical Officer on duty at the District Recruiting and Induction Station, Charlotte, North Carolina to contact all physicians

BULLETIN BOARD

EIGHTY-NINTH ANNUAL SESSION

OFFICIAL CALL

According to the By-Laws, as amended at the 1940 session, the House of Delegates will convene at Charlotte in the Ball Room of Hotel Charlotte, Monday afternoon, May 11, 1942, at 2:00 o'clock.

F. Webb Griffith, President

Attest:

Roscoe D. McMillan, Secretary-Treasurer

PROGRAM OF THE MEDICAL SOCIETY

Monday, May 11, 1942

- 9:00 a. m. — Registration Booth Opens
- 2:00 p. m. — First Meeting of the House of Delegates (Ball Room)
- 5:30 p. m. — Intermission, House of Delegates
- 8:00 p. m. — House of Delegates Reconvenes (Ball Room)

Tuesday, May 12, 1942

- 7:30 a. m. — Presidents' and Secretaries' Breakfast (Private Dining Room, Hotel Charlotte)
- 8:00 a. m. — Registration Booth Opens

FIRST GENERAL SESSION

(Ball Room)

- 9:30 a. m. — Call to Order, Roseoe D. McMillan, M.D., Chairman Committee on Arrangements.
Invocation — Bishop Clare Purcell, Charlotte
Announcements —
Presentation of the President—
- 9:50 a. m. — President's Address—F. Webb Griffith, M.D., Asheville
- 10:10 a. m. — Presentation of President's Jewel — President-Elect Donnell B. Cobb, M.D., Goldsboro
- 10:20 a. m. — Fred W. Rankin, M.D., President-Elect American Medical Association, Lexington, Ky., (McBrayer Memorial Lecturer and Guest Speaker)—"The Doctor in Washington".
- 11:00 a. m. — Report of Committee on Award of Moore County Medal for Best Paper Read in 1941 Session and Presentation of Medal to Walter R. Johnson, M.D., Asheville, for his paper on "Is Diverticulitis of the Colon a Surgical Disease?"
Hubert A. Royster, M.D., Chairman, Raleigh
A. McN. Blue, M.D., Carthage
Charles Hartwell Coker, M.D., Asheville
- 11:10 a. m. — Report of Obituary Committee:
J. B. Cranmer, M.D., Chairman, Wilmington
J. A. McCracken, M.D., Waynesville
J. W. Harbison, M.D., Shelby
- 11:20 a. m. — Brigadier-General Henry C. Coburn, Commanding Officer, Fort Bragg — "The Responsibility of the Civilian Physician in the War Emergency". (Guest Speaker) From Section on Practice of Medicine.
- 12:00 m. — Jasper S. Hunt, M.D., Charlotte — "Pediatrics, A Changing Specialty". From Section on Pediatrics.
- 12:20 p. m. — Visit our Scientific and Commercial Exhibits.
- 12:30 p. m. — Alumni Luncheon:
Wake Forest — President Eric Bell, M.D., Wilson
Duke — President Jay M. Arena, M.D., Durham
(Chas. H. Gay, M.D., Charlotte, in charge of Arrangements)
U. N. C. — President Karl B. Pace, M. D., Greenville

SECTION MEETINGS

Tuesday, May 12, 2:30 p. m.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

(Memorial Hospital)

- O. B. Bonner, M.D., High Point, Chairman
Amzi J. Ellington, M.D., Burlington, Secretary
J. M. Northington, M.D., Charlotte—"Development and Highest Usefulness of Certain Specialties".

Edgar A. Thacker, M.D., Goldsboro—"Osteomyelitis of Frontal Bone".

McLean B. Leath, M.D., High Point—"Mastoiditis".

Capt. J. B. Miller, M.D., Fort Bragg—"Some Military Aspects of Eye, Ear, Nose and Throat".

V. M. Hicks, M.D., Raleigh—"The Problem of the Blind and Visually Handicapped in North Carolina". (Before the Second General Session on Wednesday afternoon, May 13.)

Trip through Charlotte Eye, Ear, Nose and Throat Hospital—Courtesy of Staff.

SECTION ON SURGERY

(Memorial Hospital)

Tuesday, May 12, 2:30 p. m.

Hubert A. Royster, M.D., Raleigh, Chairman

Hubert A. Royster, M.D., Raleigh, Chairman's Address—"The Plight of the General Surgeon".

D. B. Koonce, M.D., Wilmington—"Local Use of Sulphonamide Preparations".

E. P. Alyea, M.D., Durham—"Castration for Carcinoma of the Prostate Gland".

Joshua Tayloe, M.D., Washington—"Ruptured Duodenal Ulcer".

R. H. Crawford, M.D., Rutherfordton—"Ileo-vaginal Fistula".

Alexander Webb, Jr., M.D., Raleigh—"Immediate Post-operative Feeding".

H. H. Bradshaw, M.D., Winston-Salem—"The Surgical Treatment of Cancer of the Lung". (Before the Second General Session, Wednesday Afternoon, May 13.)

SECTION ON PRACTICE OF MEDICINE

(Medical Library—Professional Building,
403 N. Tryon St.)

Tuesday, May 12, 2:30 p. m.

O. Norris Smith, M.D., Greensboro, Chairman

Explanatory Note: This year's program represents an innovation which we hope will please you. Instead of a half dozen lengthy papers, we have arranged a "shot-gun" clinic, consisting almost entirely of very brief and practical presentations, the majority of which should appeal to any physician primarily interested in medicine. Whether favorable or unfavorable, we would appreciate your reaction for the guidance of next year's chairman.

M. A. Griffin, M.D., Asheville—"The Treatment of Chronic Alcoholism" (5 mins.)

G. L. Donnelly, M.D. and Russel L. Holman, M.D., Chapel Hill—"The Stimulating Influence of Sodium Citrate on Cellular Repair in the Kidney Injured by Uranium Nitrate" (3 mins.)

Dan N. Stewart, M.D., Hickory—"Pentosuria" (3 mins.)

J. Fred Merritt, M.D., Greensboro—"Morphine-in-Gelatin for Addiction Therapy" (3 mins.)

George T. Harrell, M.D., Winston-Salem—"Essential Drugs for the Physician's Bag" (15 mins.)

C. F. Strosnider, M.D., Goldsboro—"Hookworm—An Etiologic Factor in Duodenitis" (5 mins.)

Archie A. Barron, M.D., Charlotte—"Experience in Treatment of Certain Mental and Nervous Disorders by Prefrontal Lobotomy" (3 mins.)

Joseph B. Stevens, M.D., Greensboro—"Economy in Vitamin Medication" (12 mins.)

D. S. Martin, M. D., Durham—"Intracutaneous vs. Subcutaneous Vaccination—comparison of immunologic responses to both methods" (5 mins.)

Symposium on Psychotherapy (3 mins for each speaker):

I. Matte-Blanco, M.D., Durham—"Psychoanalytic Therapy"

H. Loewenbach, M.D., Durham—"Electric Shock Therapy"

L. Alexander, M. D., Durham—"Hypnosis in Therapy"

M. H. Greenhill, M.D., Durham—"Therapy with in Psychosomatic Medicine"

Wingate M. Johnson, M.D., Winston-Salem—"The Use of Nicotinic Acid in Vincent's Infections" (3 mins.)

Robert L. McMillan, M.D., Winston-Salem—"A New Physical Sign in Infarction of the Lung" (3 mins.)

John Williams, M.D., Winston-Salem—"The General Principles Concerned in the Treatment of Hypertension" (5 mins.)

Tinsley R. Harrison, M.D., Winston-Salem—"Some Common Causes of Recurrent Attacks of Weakness" (3 mins.)

Brigadier-General Henry C. Coburn, M.D., Fort Bragg—"The Responsibilities of the Civilian Physician in the War Emergency" (40 mins.) (Before the First General Session, Tuesday morning, May 12.)

SECTION ON PEDIATRICS

(Tryon Room)

Tuesday, May 12, 2:30 p.m.

E. K. McLean, M.D., Charlotte, Chairman

Charles H. Gay, M.D., Charlotte, Secretary

Jay M. Arena, M.D., Durham—"The Use of Sulfonamide in Syphilitic Interstitial Keratitis".

Frank Howard Richardson, M.D., Black Mountain—"A Suggested Program for Preventive Inoculations".

Jasper S. Hunt, M.D., Charlotte—"Pediatrics, A Changing Specialty". (Before the First General Session, Tuesday morning, May 12.)

Charles H. Gay, M.D., Charlotte—"Results of Five Year Study of Management of Infants Born of Syphilitic Mothers".

John LaBruce Ward, M.D., Asheville—"The Bookish Theorist".

Angus McBryde, M.D., Durham—"The Problems of the Premature Infant in North Carolina".

PRESIDENT'S NIGHT

(Ball Room)

Tuesday, May 12, 1942

(Dress as You Please)

7:00 p. m. — Banquet—Oren Moore, M.D., Charlotte, Toastmaster; Humorous Address—"Circumstances of the Occasion", James E. Gheen, New York City.

10:00 p. m. — President's Ball.

Wednesday, May 13, 1942

8:00 a. m. — Registration Booth Opens

SECTION MEETINGS

Wednesday, May 13, 9:00 a. m.

SECTION ON PUBLIC HEALTH AND EDUCATION

(Tryon Room)

P. Y. Greene, M.D., Burlington, Chairman

A. W. Makepeace, M.D., School of Public Health, University of North Carolina—"The North Carolina Pediatric-Obstetric Refresher Course". Discussion to be led by R. B. Lawson, M.D., School of Public Health, University of North Carolina.

Lucy E. Morgan, M.D., Health Education Consultant, United States Public Health Service—"The Epidemiology of Health Education". Discussion to be led by Malcolm T. Foster, M.D., Health Officer, Cumberland County.

Ernest A. Branch, D.D.S., Director Division of Oral Hygiene, State Board of Health—"Dentistry's Contribution in Reducing Maternal Deaths". Discussion to be led by Emmett Lupton, M.D., Graham.

Irma Henderson-Smathers, M.D., Asheville—"A Study in Contraception. Report of Birth Control Clinic, Two Years' Operation". (Before the Second General Session, Wednesday afternoon, May 13.)

SECTION ON GYNECOLOGY AND OBSTETRICS

(Medical Library—Professional Building, 403 N. Tryon St.)

Wednesday, May 13, 9:00 a. m.

E. W. Franklin, M.D., Charlotte, Chairman

Oren Moore, M.D., Charlotte—"Roentgenology as an Aid to the Obstetrician". (Before the Second General Session, Wednesday afternoon, May 13.)

Arthur Grollman, M.D., Endocrinologist, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem—"The Female Sex Hormone in Obstetrics and Gynecology".

- Ivan Procter, M.D., Raleigh—"Non-Specific Cervical Infections as Cause of Upper Pelvic Pathology".
- James B. Lounsbury, M.D., Wilmington—"Advances and Limitations of the Treatment of Gonorrhea in the Female".
- Frank R. Lock, M.D., Associate Professor of Obstetrics, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem—"Bleeding Associated with Intra-Uterine Death of the Fetus".
- R. B. Dunn, M.D., Greensboro—"Threatened Abortions".

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

(Ball Room)

Wednesday, May 13, 9:00 a.m.

R. E. Smith, M.D., Mt. Airy, Chairman

- Paul F. Whitaker, M.D., Kinston—"The Pathologic-Physiology of Certain Gastro-Intestinal Complaints". (Before the Second General Session, Wednesday afternoon, May 13.)
- M. D. Bonner, M.D., Jamestown—"A Brief Discussion of Bronchiectasis".
- W. J. Lackey, M.D., Fallston—"The Injection Treatment of Certain Conditions by the General Practitioner".
- Chauncey L. Royster, M.D., Raleigh—"Early Diagnosis of Shock".
- George F. Parker, M.D., Asheville—"Ano-Rectal Disorders and the General Practitioner", with lantern illustrations.
- Samuel F. Ravenel, M.D., Greensboro—"Practical Points in Pediatrics".

10:00 a.m. — Last Meeting of the House of Delegates (Club Room First Presbyterian Church—Across Street from Hotel Charlotte.)

12:00 m. — Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health.

12:30 p.m. — Alumni Luncheons:

University of Pennsylvania — President W. B. Bradford, M.D., Charlotte

Jefferson — President Karl B. Pace, M.D., Greenville

SECOND GENERAL SESSION

(Ball Room)

- 2:00 p.m. — V. M. Hicks, M.D., Raleigh—"The Problem of the Blind and Visually Handicapped in North Carolina". From Section on Ophthalmology and Otolaryngology.
- 2:20 p.m. — H. H. Bradshaw, M.D., Winston-Salem—"The Surgical Treatment of Cancer of the Lung". From Section on Surgery.

2:40 p.m. — Irma Henderson-Smathers, M.D., Asheville—"A Study in Contraception. Report of Birth Control Clinic, Two Years' Operation". From Section on Public Health and Education.

3:00 p.m. — Oren Moore, M.D., Charlotte—"Roentgenology as an Aid to the Obstetrician". From Section on Gynecology and Obstetrics.

3:20 p.m. — Paul Dudley White, M.D., Boston, Mass., (Guest Speaker)—"Recent Advances in the Diagnosis and Treatment of Cardiovascular Disease".

4:10 p.m. — Paul F. Whitaker, M.D., Kinston—"The Pathologic-Physiology of Certain Gastro-Intestinal Complaints". From Section on General Practice of Medicine.

THIRD GENERAL SESSION

(Ball Room)

4:45 p.m. — Report of House of Delegates.

5:00 p.m. — Unfinished Business

5:05 p.m. — New Business

5:15 p.m. — Installation of President Donnell B. Cobb, M.D., and President-Elect by retiring President F. Webb Griffith, M.D.

5:25 p.m. — Remarks by President and President-Elect

5:35 p.m. — Adjourn Sine Die.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

Twenty-second Annual Meeting

May 14 and 15, 1942

Hotel Charlotte, Charlotte, N. C.

President—Dr. R. E. Rhyne, Gastonia
Vice-President—Dr. N. Thos. Ennett, Greenville
Secretary-Treasurer—Dr. Ralph J. Sykes, Raleigh

THURSDAY MORNING, MAY 14, 9:00 A.M.

FIRST GENERAL SESSION

President R. E. Rhyne, Presiding
Registration from 9:00 to 10:00 A.M.

1. Invocation.
2. President's Address—Dr. R. E. Rhyne.
3. Medical and Public Health Aspects of Civilian Protection—Dr. Hubert B. Haywood, Raleigh.

4. Public Health Nurses' Role in National Defense—Miss Bertha L. Allwardt, R.N., U. S. Public Health Service. Discussion—Miss Ruth Haye, School of Public Health, Chapel Hill.
5. Oral Hygiene in National Defense—Dr. J. N. Johnson, Goldsboro. Discussion—Dr. E. A. Branch, Raleigh.
6. Importance of Venereal Disease Control in Army and Civilian Defense and Method of Approach—Dr. N. B. Hon, U. S. Public Health Service, Washington, D. C.
7. Making Health Education a Defense Priority—Dr. Lucy Morgan, U. S. Public Health Service, Washington, D. C. Discussion—Dr. J. C. Knox, Raleigh.

THURSDAY AFTERNOON, MAY 14, 2:00 P.M.

SECOND GENERAL SESSION

President R. E. Rhyne, Presiding

1. Conduct of Venereal Disease Clinics—Dr. R. D. Wright, Raleigh. Discussion—Dr. J. Lindsay Cook, Greensboro.
2. Problems in Enforcing Public Health Laws—Professor Albert Coates, Institute of Government, Chapel Hill. Discussion—Dr. E. R. Hardin, Lumberton.
3. Paper by Sanitarians' Section—To be announced.
4. Personnel Problems—Dr. R. E. Fox, Raleigh.
5. Business Session.

THURSDAY EVENING, MAY 14, 7:00 P.M.

President R. E. Rhyne, Presiding

1. Dinner—Charlotte Hotel.
2. Introduction of Guest Speaker—Dr. Carl V. Reynolds, Raleigh.
3. Disease and Crime—Edwin Gill, N. C. Commissioner of Paroles, Raleigh.
4. Dance—Ballroom, Charlotte Hotel.

SECTION MEETINGS

HEALTH OFFICERS' SECTION

Chairman—Dr. Z. P. Mitchell

Secretary—Dr. W. P. Richardson

FRIDAY MORNING, MAY 15, 9:30 A.M.

1. Delivery Service Demonstrations in North Carolina—Dr. G. M. Cooper, Dr. W. P. Richardson, and Dr. W. R. Parker.
2. The Care of Premature Infants—Dr. Robert B. Lawson.
3. The Sulfonamide Drugs in the Treatment of Gonorrhea—Dr. H. P. Harrell.
4. The Use of a Mobile Clinic in the Local Health Program—Dr. W. K. McDowell. Discussion—Dr. W. P. Richardson.

SCIENTIFIC EXHIBITS

Ninth Medical Battalion, Fort Bragg, N. C., "A Clearing Company, Medical Department, U. S. A."—In charge of Major O. C. Pacinilli

Verne S. Caviness, M.D., Thomas L. Umphlet, M.D., and Channcey Royster, M.D., Raleigh, from Cardiovascular Department of Rex Hospital—"Sulfoevanates and Blood Pressure".

R. T. Bellows, M.D., Charlotte, "Psycho-Surgery" and "Traumatic Diabetes Insipidus".

Addison Brenizer, M.D., Charlotte, "Ureteral Transplantation".

J. A. Elliott, M.D. and David G. Welton, M.D., Charlotte, "Skin Cancer".

R. B. McKnight, M.D., Charlotte, "The Histology of the Various Golters".

L. C. Todd, M.D., Charlotte, "Inhalant Fungus Allergy".

Raymond Thompson, M.D., and W. E. Daniel, M.D., Charlotte, "Renal Anomalies".

Claude B. Squires, M.D., and A. M. McDonald, M.D., Charlotte, "Urological Exhibits".

William Allan, M.D., Charlotte, "Prevention of Hereditary Diseases".

R. B. McKnight, M.D., Charlotte, "A Modern Library", Mecklenburg County Medical Society.

Exhibits from Memorial Hospital, Charlotte:

1. Department of Pathology
2. Radiology
3. Surgery
4. Artificial Fever Therapy

Carolina Chapter of American Physio-Therapy Association, "Model Physio-Therapy Department".

COMMERCIAL EXHIBITS

A. S. Aloe Company, St. Louis, Mo., Spaces No. 25 and 26

American Hospital Supply Corp., Chicago, Ill., Spaces 53, 54 and 55

Billhuber-Knoll Corporation, Orange, N. J., Spaces No. 7 and 8

The Borden Company, New York City, Space No. 6

Camel Cigarettes, New York City, Spaces No. 35 and 36

Commercial Casualty Insurance Co., Newark, N. J., Space No. 27—Representative, Mr. J. L. Crumpton, Durham, N. C.

Doak Company, Inc., Hyattsville, Md., Spaces No. 38 and 60

Dohio Chemical Company, New York City, Spaces No. 31 and 32

Eli Lilly and Company, Indianapolis, Ind., Spaces No. 13 and 14

General Electric X-Ray Corporation, Charlotte, N. C., Spaces No. 70, 71 and 72

Harrower Laboratory, Inc., Glendale, Cal., Space No. 4

Charles C. Haskell and Co., Inc., Richmond, Va., Spaces No. 58 and 59

Hyson, Westcott and Dunning, Baltimore, Md., Spaces No. 40 and 41

John Wyeth and Brother, Inc., Philadelphia, Pa., Spaces No. 9 and 10

Lederle Laboratories, New York City, Spaces No. 42 and 43

M & R Dietetics Laboratories, Inc., Columbus, Ohio, Spaces No. 11 and 12

Mead Johnson and Company, Evansville, Ind., Spaces No. 15, 16, 17 and 18

C. V. Mosby Company, St. Louis, Mo., Space No. 3

Ortho Products, Inc., Linden, N. J., Space No. 52

Pet Milk Corporation, St. Louis, Mo., Spaces No. 49, 50 and 51

Philip Morris & Co., Ltd., New York City, Spaces No. 68 and 69

Picker X-Ray Corporation, New York City, Spaces No. 28, 29 and 30

Powers and Anderson, Inc., of North Carolina, Winston-Salem, N. C., Spaces No. 1 and 2

S & H X-Ray Corporation, Charlotte, N. C., Spaces No. 44, 45, 46, 47 and 48

Smith, Kline and French Laboratories, Philadelphia, Pa., Spaces No. 23 and 24

E. R. Squibb and Sons, New York City, Spaces No. 21 and 22

Tablerock Laboratories, Greenville, S. C., Space No. 5

Valentine's Meat Juice Company, Richmond, Va., Space No. 37

William S. Merrell Company, Cincinnati, Ohio, Spaces No. 33 and 34

Winchester Surgical Supply Company, Charlotte, N. C., Spaces No. 65, 66 and 67

Winthrop Chemical Company, New York City, Spaces No. 19 and 20

Carolina Surgical Supply Company, Raleigh, N. C., Spaces No. 56 and 57

Zimmer Mfg. Co., Warsaw, Ind., Space No. 60

NOTICE TO ESSAYISTS

IMPORTANT

Each Essayist is requested (see By-Laws) to hand to the Chairman following the reading of the paper, an original copy, together with any illustrations or other material used with the paper. Those desiring to review their papers before publication should make a carbon copy for such purpose. All papers should be typewritten and double spaced, with references arranged according to the form used in publications of the American Medical Association. Cuts will be made at the author's expense.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The North Carolina Conference for Social Service, of which Dr. George M. Cooper, Assistant State Health Officer, is the President, held its thirtieth annual meeting on April 16 and 17 in Raleigh. The dominant theme of the Conference was "Human Welfare and Government in a World at War". Among the speakers were Governor J. Melville Broughton, Associate Justice A. A. F. Seawell, of the North Carolina State Supreme Court, who spoke on the subject, "Mobilizing Social and Moral Forces in War Time," Mr. Robert E. Bondy, of Washington, Administrator of the American Red Cross Services to the Armed Forces, and Miss Elizabeth McCord de Schweinitz, Field Supervisor at the Pennsylvania School of Social Work.

All men who enter the armed service are immunized against typhoid fever and other controllable diseases. They are kept under observation and those who contract venereal diseases are segregated and given treatment, but what about the sources of infection? Until these are dried up, there can be no permanent or lasting victory against such diseases.

We are told by those who know that more than 60,000 of the first 1,000,000 Americans who underwent physical examinations for selective service were rejected because of syphilis and gonorrhea; further, that in the first World War 7,000,000 days of service were lost to the United States Army as the result of venereal infections—a total of 338,746 men, the equivalent of 23 divisions, received treatment. In peace time, millions of dollars every year are wasted in industry, as the result of venereal infections.

Your State Board of Health, through the means at its disposal, is waging a vigorous campaign against venereal diseases, in cooperation with the United States Public Health Service and other agencies.

The State Board of Health in cooperation with local boards of health will, on May 1, set up a series of clinics in which any person can be immunized against smallpox, typhoid fever, diphtheria and whooping cough. This movement is designed to furnish quick and widespread protection at a time when we are at war and when anything can happen. Whooping cough last year claimed the lives of 199 North Carolina children, as compared with 88 the previous year.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. William deB. MacNider, Dr. James C. Andrews and Dr. Russell L. Holman attended the meeting of The Federation of American Societies for Experimental Biology in Boston, April 1 to 4.

Dr. Holman presented a paper before the American Society for Experimental Pathology, entitled: "Experimental Arterial Lesions in Dogs Related to Diet and Renal Insufficiency".

Dr. Andrews presented papers as follows:

- (1) "The Enzymatic Conversion of Quinine In Vitro By the Tissues of the Rat".
- (2) "The Enzymatic Conversion of Quinine In Vivo In the Rat".
- (3) "The Extraction of Proteins From Aqueous Solution by Means of Emulsification With Chloroform".

These two papers were presented under the joint authorship of Dr. Carl E. Anderson and Dr. Andrews.

This was done in conjunction with W. E. Cornatzer and A. B. Sample.

Dr. W. C. George and Dr. C. D. VanCleave, of the Department of Anatomy, attended the meetings of the American Association of Anatomists in New York City April 1 to April 3. Dr. George presented a paper entitled "Double Notochord in a Pig Embryo".

Dr. Frederick P. Lord, Professor of Anatomy of Dartmouth University School of Medicine, is spending his spring vacation in Chapel Hill and is a welcome visitor to the School of Medicine.

Dr. J. M. Bullitt, Dr. James C. Andrews and Dr. H. Ward Ferrill attended the meetings of the North Carolina Academy of Sciences held in Greensboro April 24 and 25.

Dr. William deB. MacNider attended the annual meeting of American College of Physicians in St. Paul, Minn., and on April 22 delivered the convocation address before that meeting.

Dr. William B. Fleming, Research Professor of Syphilology of the faculty of the School of Public Health, was in Hot Springs, Arkansas, during the week of April 7, where he gave lectures in the Postgraduate Training Course at the Venereal Disease Medical Center. These lectures are given under the auspices of the U. S. Public Health Service.

Dr. J. P. Gray, of the W. K. Kellogg Foundation, Battle Creek, Michigan, is serving as Visiting Professor in Public Health Administration in the School of Public Health during part of the spring quarter. Dr. Gray is Director of Public Health of the Hillsdale County, Michigan, Health Department. The health work in this County and seven adjacent counties is supported and under the auspices of the W. K. Kellogg Foundation. Prior to going to Michigan, Dr. Gray was Assistant Director of Health and Public Welfare in San Francisco, California, and on the staff of the Department of Preventive Medicine in the University of California Medical School.

Dr. Sterling Brackett, of the faculty of the School of Public Health, attended a meeting of Southeastern Parasitologists during April. This meeting was called by the U. S. Department of Agriculture Parasitological Research Laboratory at Auburn, Alabama.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

The Department of Pathology of the Bowman Gray School of Medicine were hosts to the American Association for the study of Neoplastic Diseases at its spring meeting, held April 23, 24, and 25.

Dr. Tinsley R. Harrison, Professor of Medicine, was a guest speaker at the Fourteenth Annual Spring Clinical Conference of the Dallas Southern Clinical Society, held March 23-26 in Dallas, Texas. He gave three addresses before the Conference, and held a Heart Clinic. Dr. Harrison also delivered the annual J. Marion Sims lecture before the J. Marion Sims Society of the Medical College of the State of South Carolina in Charleston on April 18. The subject of his lecture was "Cardiac Dyspnea". On April 29 Dr. Harrison spoke in Columbus, Ohio, before the annual meeting of the Ohio State Medical Association, on "Hypertension: Some Recent Advances."

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The North Carolina Tuberculosis Association held its annual meeting in Charlotte on April 29. Among the speakers at the morning session were Dr. E. J. Wannamaker, President of the Mecklenburg County Medical Society, who gave the address of welcome, and Dr. J. A. Myers, Professor of Medicine at the University of Minnesota, who spoke on "The Control of Tuberculosis in a Community." Dr. Myers was introduced by Dr. P. P. McCain. Dr. Myers spoke again at the luncheon session, on "Some Practical Problems in Tuberculosis". A luncheon for Negroes was also held, at which Mr. Daniel C. McCarthy spoke.

Officers of the Association for 1941-42 were Dr. Charles W. Armstrong, President; Dr. William H. Smith, Vice President; Dr. Harry L. Brockmann, Secretary; Mr. H. M. Holbrook, Acting Treasurer; Mrs. C. C. Hook, Honorary Vice President; and Mr. Frank W. Webster, Executive Secretary. The Executive Committee is composed of Dr. P. P. McCain, Mrs. Charles E. Platt, Dr. P. A. Yoder, and the officers.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society met on April 21, in North Wilkesboro at the Wilkes Hotel. The program was as follows:

1. Nutrition Deficiencies and Diseases of Infancy and Childhood—R. J. Lovell, M.D., Mt. Airy
2. L. W. Holladay, M.D., High Point
3. Recent Advances in Prenatal Care—Chas. H. Mauzy, Jr., M.D., Winston-Salem
4. Rheumatic Fever, Diagnosis and Treatment—S. F. LeBauer, M.D., Greensboro
5. Parathyroid Tumors—George W. Joyner, M. D., Asheboro

Business Meeting, Election of Officers.
Dinner Meeting.

1. Greetings from the Medical Society of the State of North Carolina—
F. Webb Griffith, President, Asheville
Roscoe D. McMillan, Secretary, Red Springs
2. The Nervous Heart—
Tinsley Harrison, M.D., Winston-Salem.

BOARD OF MEDICAL EXAMINERS

The Board of Medical Examiners of the State of North Carolina will hold its next meeting in Raleigh, June 15-19, 1942, at the Sir Walter Hotel at 9 a.m. Dr. W. D. James, Secretary, Hamlet, North Carolina.

THE THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society met at the Community Building in Marion on April 16. The following program was presented after dinner:

"The Golden Age of Medicine"—Dr. David Edsall, Tryon
"Some Changes in the Blood During Pregnancy"—
Dr. D. F. Moore, Shelby
"A Report on the Investigation of the State Hospital"—Dr. Guy S. Kirby, Marion.

BUNCOMBE COUNTY MEDICAL SOCIETY

Dr. William E. Wilmerding spoke to the Buncombe County Medical Society at its first April meeting on "The Metamorphosis of a Civilian Doctor Into an Army Medical Officer". At the second meeting in April, held on April 20, Dr. John H. Dougherty gave "Some Clinical Observations on the Pathology of Urethral Gonorrhea."

COURSE IN ELECTROCARDIOGRAPHY

The Cardiovascular Department of the Michael Reese Hospital offers a full-time intensive course in Electrocardiography from August 17 to August 29, 1942, by Dr. Louis N. Katz, Director of Cardiovascular Research.

This is an intensive course offered to the general practitioner. As group and individual instruction will be given, the course is open to both the beginning and advanced student in Electrocardiography.

For further information address: Michael Reese Hospital, Cardiovascular Department, 29th and Ellis Ave., Chicago, Illinois.

NEWS NOTES

Dr. Paul Ringer of Asheville addressed the Alabama Tuberculosis Association at Birmingham on March 24.

Summer Diarrhea in Babies

Casce (calcium caseinate), which is almost wholly a combination of protein and calcium, offers a quickly effective method of treating all types of diarrhea, both in bottle-fed and breast-fed infants. For the former, the carbohydrate is temporarily omitted from the 24-hour formula and replaced with 8 level tablespoonfuls of Casce. Within a day or two the diarrhea will usually be arrested, and carbohydrate in the form of Dextri-Maltose may safely be added to the formula and the Casce gradually eliminated. Three to six teaspoonfuls of a thin paste of Casce and water, given before each nursing, is well indicated for loose stools in breast-fed babies. Please send for samples to Mead Johnson & Company, Evansville, Indiana.

The Art of Diagnosis.—The art of diagnosis is based on the recognition of signs and symptoms. It is often necessary to wait for them to develop before an exact diagnosis can be made. In abdominal catastrophes, mistakes are pardonable. The unpardonable sin is to wait until error is impossible. That would mean the sacrifice of human life on the altar of statistical perfection.—William J. Carrington: Differential Diagnosis of Acute Lower Abdominal Lesions in the Female, J. M. Soc. New Jersey, 38:504 (Sept.) 1941.

AUXILIARY

FUNDS FOR MEDICAL AND SURGICAL WAR RELIEF

Under the leadership of Mrs. Thomas Leslie Lee of Kinston, State Chairman of National Defense for the Auxiliary, the organization has taken cognizance of the war emergency by raising funds for the purchase of medical and surgical supplies for the United States and her Allies. The Auxiliary has conducted this war relief work in cooperation with the Medical and Surgical Relief Committee of America, an agency conducted by hundreds of volunteer doctors and nurses with headquarters in New York.

The Medical and Surgical Relief Committee is composed exclusively of physicians and surgeons who have volunteered their services. All supplies and equipment received at committee headquarters are inspected by experts before being packed for shipment. If not worth reconditioning, instruments are melted down for use as surgical steel.

Proceeds from the sale of mercy emblems will be applied to the purchase of medical and surgical supplies to equip emergency hospitals for civilian casualties in England, among the "Free French", and in Equatorial Africa, China and the United States.

The committee has collected from physicians and dentists old surgical instruments and samples they have received from pharmaceutical manufacturers. Since last November, \$100,000 worth of supplies have been sent to Greece, and in July twelve mobile hospital units were equipped to be sent to China. Transfer companies have been very cooperative in taking the equipment to headquarters without charge.

The Auxiliary this month goes to the State Convention in Charlotte, and returns are not yet complete on the accomplishment of this work. Thus far, however, the doctors' wives in North Carolina have raised sufficient money to purchase three operating kits, one emergency medical field set and one first aid kit. Three cases of instruments were donated by Dr. I. H. Manning of Chapel Hill. The money was raised chiefly through the sale of Mercy Emblems, attractive patriotic coat-lapel pins, and to date more than \$600 have been contributed toward this cause.

Lenoir County, home of Mrs. Lee, heads the state thus far in contributions, having raised around \$270.00. Wake County runs a

close second, clearing around \$225.00, and Hoke County holds third place with a contribution of \$127.00. Other counties assisting in the sale of emblems and amounts raised were as follows: New Hanover, \$33.00; Sampson County, \$24.00; Craven County, \$22.00; Guilford County, \$18.00; and Rockingham County, \$20.00 (still selling). These figures are not final, as reports are still coming in to Mrs. Lee and all amounts will not be tabulated until the eve of the Executive Board meeting in Charlotte on Monday, May 11.

It should be very gratifying to all who have helped to put over the Civilian Defense Program to know that medical equipment is now available for Civilian Defense needs in North Carolina.

ANNOUNCEMENT

Last Call for reservations for the Twentieth Annual Convention of the Woman's Auxiliary to the American Medical Association, which will be held at Haddon Hall, Atlantic City, New Jersey, June 8-12.

Atlantic City extends a hearty welcome to you!

FOR PROGRAM OF AUXILIARY MEETING IN
CHARLOTTE SEE APRIL ISSUE

In Memoriam

WILLIAM PINCKNEY KNIGHT, M.D.

By Wesley Taylor, M.D.

Dr. William Pinckney Knight passed away on February 2, 1942, after an illness of several months.

Dr. Knight was born in Rockingham County on July 13, 1872. He was a graduate of Oak Ridge Institute and the Baltimore Medical College, receiving his M.D. degree in 1898. After a postgraduate course in the Maryland General Hospital he practiced in Alamance County for four years. In 1903 he came to Greensboro and soon became chief physician of the great Cone Mills—a position he held to the time of his death.

In 1906 he married Miss Nell Hendrix. Mrs. Knight, two sons and four daughters survive him.

There are few families in this community who are untouched by the influence of this remarkable man, as friend, counselor, or physician. He practiced among us for forty years, and assisted at the births of more than 5000 children. He was a ruling Elder in the Buffalo Presbyterian Church and President of the Cone Memorial Y. M. C. A., in the establishment of which he was an influential factor. He was a tower of strength in the councils of the Guilford County Medical Society, of which he was once President. In the memory of the writer there has been no one more trusted and respected or more beloved than he.

His close friends believe that his end was materially hastened by his devotion to service and duty. Even up to the last few weeks of his life he found it impossible to refuse any call of distress as long as he was able to respond.

In the passing of William Pinckney Knight this Society has suffered a great loss—the loss not only of an esteemed member but of an ornament to our profession. Individually we have lost a valuable and beloved friend; the community has lost a public benefactor.

Obituary Committee

- Rigdon Dees, M.D., Chairman
- E. T. Harrison, M.D.
- M. A. Lakey, M.D.
- Wesley Taylor, M.D.

CARLOS CURTIS HUDSON, M.D.

By Herman R. Parker, M.D.

In accordance with our time-honored custom, we are committed to record the death and to review the life and works of a member of this society.

In the early morning of February 17, Dr. Carlos Curtis Hudson, aged 60, Greensboro's able and beloved health officer, departed this world.

Born on a farm in Madison County, Kentucky, on November 23, 1881, Curtis Hudson was the third of eight children of John B. and Anne Parks Hudson—both of whom survive at the remarkable ages of 92 and 88 years respectively. His boyhood was spent at the place of his birth, and he received his early education at a nearby country school. Later he taught for two years in a mountain school at Kirby Knob, Kentucky, after which he attended the Berea Normal School, and Berea Academy, graduating from the latter in 1905. He then entered upon the studies of his profession at the University College of Medicine in Richmond, Virginia, where he made a most enviable record as a student.

Following graduation in 1910, Dr. Hudson took an internship at the Retreat for the Sick, after which he became assistant health officer of the city of Richmond. On December 23, 1912, he was married to Miss Sue Lewis Richmond of Milton, North Carolina. In 1913 he was appointed health officer of Danville, where he organized and directed a modern health unit, and founded the Hilltop Tuberculosis Sanatorium. In 1915 his only child, Nancy Richmond, was born.

Largely as a result of his excellent work in Danville, Dr. Hudson was chosen for a somewhat similar undertaking at Charlotte, after four years. With the ability, skill, and resourcefulness that so characterized him throughout life, he effected another excellent health organization, and remained in Charlotte three years as health officer. During the first World War he served in the capacity of public health officer in charge of the military zone around Camp Green, with the commission of Past Assistant Surgeon in the U. S. Public Health Service.

In 1920 Dr. Hudson was recalled to Richmond to assume the duties of city health officer. After four years there he heard another cry from the wilderness, responded, and appeared in our midst. Thus began in this vicinity a new era in public health. Coming to us in the prime of life, he was well qualified for the tasks ahead. The scope of his undertakings and his able administration soon attested a rare comprehension and a clear vision. In Greensboro we all, physician and layman alike, turned to Dr. Hudson for counsel in the protection of our patients, ourselves, and loved ones from the

hazards of disease. The untold lives in this community which he steered from the tentacles of disease and death, as reflected in the rapid and continuous decline in our morbidity and mortality rates, bear effective witness that service was the beacon of his life. One notable indication of his ability, alertness and progressive attainments was the signal honor achieved by Greensboro in the National Chamber of Commerce City Health Conservation Contests. For five years Greensboro was the only city of its group (50,000 to 100,000 population) in the South to achieve the distinction of being an honor city, and in 1938 it was one of the four cities in the United States to receive this rating.

Besides serving on numerous civic, medical, and hospital committees and boards, Dr. Hudson was several times president of the various hospital staffs of Greensboro. He was a past president of this society, a Fellow of the American Public Health Association, and in 1928-1929 was president of the North Carolina Public Health Association. His contributions to medical literature, while not voluminous, are notable.

Dr. Hudson was a man without vice. He engaged enthusiastically in games and sports, and was an ardent lover of the great outdoors. He was a kind, loving husband and father, a devout Christian, and a gentleman. Profoundly modest, and always exhibiting dignity, fortitude, a loftiness of spirit and purpose, and with a rare gift of leadership, he lived a most worthy, beautiful, and interesting life. He experienced abundantly the vicissitudes of a physician as well as those of a health officer, and he reaped bountifully in satisfaction the reward of much needed work well done.

In ecclesiastical language, Dr. Hudson must have felt called to the field of public health. Surely, not without the hand and inspiration of Providence can man perform with such zeal, glory, sympathy and proficiency, so magnanimously. He loved all people and was happiest when ministering to them.

Truly, we have lost a treasure. He has crossed the stage of action, a colorful and matchless figure, to take his place among the immortals.

"For by his life and works, he is immortal."

Therefore, be it resolved, that the Guilford County Medical Society records with deep sorrow and regret the untimely passing of Dr. Carlos Curtis Hudson; that in his demise this society has lost an able and faithful member, and the community a most valuable citizen and physician.

Be it resolved further, that a copy of these resolutions be spread upon the minutes of this meeting, and that a copy be sent to the family of the deceased.

Obituary Committee

- Rigdon Dees, M.D., Chairman
- E. T. Harrison, M.D.
- M. A. Lakey, M.D.
- Wesley Taylor, M.D.

We have no dependable measures that serve to bring about permanent interruptions of tuberculosis such as drugs, foods or even mechanical procedures. Therefore, our programs must be developed with one ultimate aim, namely the creation of an environment free from tubercle bacilli. In some places this has already been nearly accomplished, and only a short time is needed to complete the work. In other places, little has been done and much intensive work over a long period of time will be necessary. In both places, the fundamentals of control are the same and identical procedures must be carried out.—J. A. Myers, M.D. Trans. N. T. A., 1940.

BOOK REVIEWS

Surgery of the Ambulatory Patient. By L. Kraeger Ferguson, M.D., F.A.C.S., Lieutenant-Commander, Medical Corps, U. S. Naval Reserve; Assistant Professor of Surgery, University of Pennsylvania; Surgeon, Philadelphia General Hospital and Doctors Hospital. 923 pages with 645 illustrations. Price, \$10.00. Philadelphia: J. B. Lippincott Company, 1942.

There has been a need for such a book for a long time. Especially is it valuable to medical students and young practitioners of medicine. Some experience is required to know just what types of injury may be treated satisfactorily in the ambulatory patient. This book answers this question authoritatively. It is well written and well illustrated, and the reviewer can heartily recommend it.

The 1941 Year Book of Pediatrics. Edited by Isaac A. Abt, D. Sc., M.D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Passavant Hospital; Consulting Physician, Children's Memorial Hospital and St. Luke's Hospital, Chicago; with the collaboration of Arthur F. Abt, B.S., M.D., Assistant Professor of Pediatrics, Northwestern University Medical School; Associate Attending Pediatrician, Michael Reese Hospital; Attending Pediatrician, Chicago Maternity Center; Attending Physician, Spaulding School for Crippled Children and La Rabida Jackson Park Sanatorium, Chicago. 512 pages, illustrated. Price, \$3.00. Chicago: The Year Book Publishers, 1942.

The present volume maintains the excellence of the earlier Year Books of Pediatrics. The medical literature has been carefully and succinctly summarized to give a well-coordinated review of the advances made in pediatrics as well as in related subjects. The book is not too highly specialized and will prove of value to the internist as well as to the specialist in childhood diseases. It offers a useful, convenient and well-written resume which should appeal to the general practitioner. Principles for resuscitation of the newborn, recent advances in the treatment and prophylaxis of rheumatic fever, the treatment of pyuria, the Kenny treatment of poliomyelitis and similar matters of current practical interest are clearly epitomized.

Medical Genetics. By Laurence H. Snyder, Sc.D., Professor of Medical Genetics, Ohio State University. 130 pages with 24 illustrations. Price \$1.50. Durham: Duke University Press, 1941.

A series of lectures on medical genetics delivered last year by Dr. Snyder at the medical schools of Duke University, Wake Forest College, and the University of North Carolina, and made possible through the generosity of the Carnegie Corporation, aroused such interest among the students and faculties of these institutions that Dr. Snyder was persuaded to make them accessible to a larger audience by publication in book form. The present compact volume is the outgrowth of these lectures, and it merits the attention of all physicians.

A Primer on the Prevention of Deformity in Childhood. By Richard Beverly Raney, M.D., Associate in Orthopedic Surgery, Duke University School of Medicine, in collaboration with Alfred Rives Shands, Jr., M.D., Medical Director, Alfred I. duPont Institute, Visiting Professor of Orthopedic Surgery, University of Pennsylvania School of Medicine. 185 pages, illustrated. Price, \$1.00. National Society for Crippled Children, Inc., Elyria, Ohio, 1941.

This book fulfills a long felt need for a text which is concise, readable, and can be readily understood by both the physician and the lay co-worker in the problem of the crippled child. It should prove a valuable reference in the library of every practicing physician, and all medical students, nurses, social workers, and teachers should be entirely familiar with its clear, concise principles. It should be the means of preventing many deformities. Artist's drawings depicting the many crippling deformities are included, and they have much more teaching value than photographs or x-rays.

This excellent little volume is very timely and should be an aid to both the physician and his lay co-worker in the fight against crippling conditions. The glossary of terms contained in the back pages adds much to the value of this book as a guide and reference.

The History and Evolution of Surgical Instruments. By C. J. S. Thompson, M.D., Curator of the Royal College of Surgeons of London. 113 pages, illustrated. Price, \$8.50. New York: Schuman's, 1942.

This book contains many interesting facts, although the reproductions of the pictures are not particularly clear, and the text is not easy to read. It is of value to have the information collected in one small volume.

Colchicine. — The mechanism of the action of colchicine is not known. Few pharmacological studies have been made and little more can be said than that it is effective clinically. We have never observed a patient to be hypersensitive to the drug, nor does the drug appear to lose its efficacy with repeated ingestion.—John H. Talbott: *Clinical Gout*, Rocky Mountain M. J. 38:193 (March) 1941.

OPPORTUNITY

I am in need of an assistant for coal mining practice, with some private practice. Good salary with share in extra collections. Excellent opportunity for right man. If interested write

Dr. H. P. EVANS
Keystone, West Virginia

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PRESIDENT'S ADDRESS THE DOCTOR AND THE EMERGENCY

F. WEBB GRIFFITH, M.D.

ASHEVILLE

"That from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom—and that government of the people, by the people, for the people, shall not perish from the earth."

At the time these simple majestic words were uttered, our country was torn asunder by a devastating war in which brother fought brother with an intense hatred. It looked as if this promising young nation was headed for a suicidal death.

Your speaker was taught in childhood to hold sacred the memory of a close relative who, in a uniform of gray, made the supreme sacrifice at Gettysburg, and to revere the cause for which he gave his life. Fewer than fourscore years have elapsed since Appomatox. No longer are there any "rebels" or "damn yankees", and the Mason and Dixon line has long since been obliterated.

We stand a united nation, the most powerful and richest on earth. Notwithstanding our unity, strength and wealth, we are in greater danger than in the dark days of '63 or when poppies grew in Flanders Field. It behooves every citizen of this country to decide, not whether he will take part in this titanic struggle—for to do otherwise is inconceivable—but how he can best serve.

We as physicians have numerous oppor-

tunities peculiar to our profession. These I shall present to you briefly.

1. Obviously the greatest need for our services is with the armed forces. At the present time there is no way of estimating what the ultimate demand will be. In the Revolutionary war there were approximately fourteen hundred doctors in service. In 1917, before declaration of war, the Medical Corps of the regular army was between six and seven hundred. At the time of the armistice there were 31,000 medical officers, 5,000 dental officers, and 2,000 veterinary officers. Also there were 20,000 nurses, 10,000 of whom served overseas, and 280,000 enlisted men serving in the Medical Department. That was the requirement for an army of 3,500,000.

Should we have an army of ten million, then, at the same ratio there would be required in the Medical Department personnel 87,300 medical officers, 10,300 dentists, 5,000 veterinarians and 61,000 nurses. A determined effort is being made, in so far as is possible, to have the doctors in service assigned to the work for which they are best fitted. Obviously no hard and fast lines can be made, and many excellent specialists will be doing work for which they are not best fitted. Likewise many general practitioners with very meager special training will be classified as specialists, even though they could not qualify as such in private practice. In such a huge undertaking there are sure to be some square pegs in round holes.

One who should be in a position to know whereof he speaks has estimated that for

an army of ten million, the following number of physicians, classified as specialists, will be needed:

General operating surgeons	8000
Assistants to general operating surgeons	3590
Neurosurgeons	1340
Thoracic surgeons	1250
Plastic and maxillofacial surgeons	1360
Internists	7130
Neurologists	1960
Neuropsychiatrists	1920
Gastro-enterologists	1960
Dermatologists	980
Ophthalmologists	1000
Tuberculosis specialists	980
Urologists and syphilologists	2930

Finally there is a group of 6500, consisting of clinical pathologists, bacteriologists, biochemists, pathologists, serologists, toxicologists, epidemiologists, parasitologists, and others.

This means that the army will need about 57,000 physicians with special training in some field.

2. Selective Service

Twenty-five thousand or more physicians are donating freely their time and skill in the examination of the draftees. They are doing a good job, often being subjected to unjust criticism in the performance of their duty. Doubtless some of these will join the armed forces and be replaced by others who, because of age or disability, must remain at home.

3. Industry

In this country the worker in industry loses an average of slightly over eight days a year from illness, much of which is preventable. In a year this amounts to between three hundred and fifty and four hundred million days, or one million work years a year.

It is a trite saying that fighting men without equipment are useless. We condemn, and rightly so, strikes and mismanagements which slow down production. But in preventable illnesses of the workers there is a colossal waste which overshadows anything else in slowing production.

There is need for a large number of physicians trained in industrial medicine and surgery. It is not enough that an industrial physician should seek to eliminate the med-

ical and surgical hazards incident to employment; he should go further and supervise the health of the employees in general. In ordinary times this might be an infringement on the rights of the family physician. These are not ordinary times, and the interests of the individual physician must be secondary to the interest of the country.

An employer might feel that he has no responsibility for the prevention of an employee's illness not connected with employment. But time lost by a sick workman retards production, regardless of when, where or how the illness was contracted.

Many physicians who are already interested to some extent in industrial medicine could with profit devote more time and effort to that phase of their work. Those industrial physicians who are supervising large numbers of workmen are serving better than they could in active military service, and should be given deferment. Industrial medicine offers an excellent field for women physicians and also for some of the older physicians who are unable to carry on a strenuous private practice.

4. Rehabilitation

A bulletin from the National Headquarters of the Selective Service System contains the following paragraph: "The President has charged the Selective Service System with the administration of a program for the physical rehabilitation of rejected men who can be completely and permanently rehabilitated at a reasonable cost in a reasonably short period of time, and made available for general military service in the armed forces.

"Of the 900,000 who have been classed as available for limited military service or disqualified for military service, an estimated 200,000 can be completely physically rehabilitated for the performance of general military service. Perhaps one half of these who have remedial defects, or 100,000, have dental defects that can be successfully corrected."

Since this bulletin was issued, six months ago, the number of draftees examined and consequently the number of rejectees have carried these figures much higher. Now that the requirements for acceptance by the army are not quite so rigid as they were formerly, the ratio of rejectees is slightly lower. The present plans are to have these remedial defects handled by local physicians. In every community physicians especially qualified



F. WEBB GRIFFITH, M. D.



will be designated to carry out these corrective measures with reasonable compensation for their services. Any physician may make application to be placed on this designated list, and if there is no doubt as to his qualifications, his name will probably be added. If a draftee declines to have his disability corrected he may be inducted into the army and then under orders be rehabilitated.

At the request of our Governor the boys in the senior classes of the high schools are being given an examination more thorough than that given the draftees by the local boards. While the examinations have not been completed and the results tabulated, it looks as if their defects will be about the same as those in the draftees. It is a notorious fact that much time and effort are often spent in examinations and investigations, only to have the findings pigeon-holed and forgotten. In this instance, however, the Governor is vitally interested in having these boys "prehabilitated" and rendered physically fit before reaching the age for registration, and he will make very effort to obtain funds with which to do this work. These corrections will probably be made by local physicians in the same manner and with the same reasonable compensation as in the case of the draftees. When these "prehabilitations" have been completed, North Carolina will have made a generous and patriotic pioneer contribution.

5. Civilian Defense

The demands of the armed forces have been so great and so urgent as to overshadow the needs for civilian protection. We have felt so secure in our isolation that we are not prepared to handle the casualties of war in our civilian population.

North Carolina has a long and vulnerable coast line. The defense against invaders is the duty of the military authorities; but the care of those injured by invaders is the responsibility of the medical profession, and we are not prepared. The Federal Security Agency and the Office of Civilian Defense will give monetary assistance and valuable advice, but North Carolina is primarily responsible for the care of those injured in North Carolina. Numerous emergency base hospitals will be established for the care of evacuated casualties, and for these the part time services of a large number of physicians, surgeons and other specialists and dentists will be required. If we wait, hoping to secure physicians when the need

arises, it will be the same old story—"unprepared."

The United States Public Health Service offers commissions on the inactive list to many physicians and dentists, who because of age or disability are ineligible for military service. Also women physicians will be welcomed. For purposes other than the treatment of war casualties, pediatricians, obstetricians and especially women physicians may be needed in those areas into which women and children are evacuated. During the time these physicians are on the reserve or inactive list, they receive no salary and are not in uniform. If and when their full time is needed they are put on the active list, don uniforms and receive the pay of their rank. As far as possible, the services of these reserve officers will be utilized in the area in which they reside.

Those doctors who because of age, disability or sex are denied the privilege of service with the armed forces can do their part by offering their services to the State Chief, Emergency Medical Service, Office of Civilian Defense.

It may seem a far cry from Coventry to Charlotte. But we must remember that only a few months ago the Wheelers, Lindberghs, and Hamilton Fishes were assuring us that there would be no war, and that all of the urgent preparation was but an evidence of hysteria. No good purpose can be accomplished by blaming those who were misled and who misled others in the past. But from now on, anyone who preaches complacency on the ground that it can't happen here, or who minimizes the necessity for complete utilization of all of our military and civilian strength in this crisis, is guilty of gross criminal negligence.

6. Finally there are those who because of age or disability are unable to qualify for military service. Upon these will rest the responsibility of looking after the rank and file of the civilian population. Until the beginning of the present emergency, North Carolina with a population of 3,500,000 had approximately 2500 doctors in active practice, or one doctor to about 1400 people.

If our armed forces reach ten million, and North Carolina contributes its quota of doctors and enlisted men, there will remain about one doctor to 2500 civilians.

If efficient service is to be rendered there will have to be a radical readjustment of the present system. The colossal waste of time,

tires and gas from unnecessary duplication must be reduced to a minimum. No longer should a doctor spend a considerable portion of his time in travelling from house to house, and frequently going back over the same route to answer belated calls. Several of his colleagues may be covering that same territory at the same time. Many patients treated at home could be just as efficiently and far more easily cared for at the office. Some of these patients take the attitude that it is more convenient for them to have the doctor come to their homes than for them to go to the doctor's office. They know full well that a doctor will make that sacrifice rather than run the risk of their displeasure and loss of patronage.

I venture to make a few suggestions:

1. Patients should be urged to go to the doctor's office whenever possible instead of requesting the doctor to make a home visit.

2. The present hospital facilities should be reserved primarily for surgical, urological and similar conditions requiring operating or special treatment rooms.

3. Nursing homes should be established in some central location for the care of those who under normal conditions would be treated at their own homes.

4. The suburbs of cities and the rural sections where there are more than two or three doctors should be divided into districts and doctors allocated to those districts according to the number of physicians available.

5. A patient could select his doctor by going to his office or by entering a nursing home. If he remained at his home from choice or necessity, then he should be content to have for the duration of that illness the doctor or one of the doctors serving that area.

These are but a few of the ways by which the available medical service may be used to its fullest advantage. Any community could modify this arrangement according to its peculiar needs.

I realize that there are many objections to such a plan, and that a patient will have to cooperate in order to get the physician of his choice. Possibly he may not be able to get the doctor he prefers, and may be forced to select one from a limited number. But what of it? Until this war is won every phase of our lives will be geared to conservation and sacrifice—a small price to pay for victory.

One hundred and sixty-seven years ago the people here in Mecklenburg County resolved: "That we do hereby declare ourselves a free and independent people, who are, and ought to be, a sovereign and self-governing association, under the control of no other power than that of our God and the General Government of the Congress; to the maintenance of which independence, we solemnly pledge to each other, our mutual cooperation, our lives, our fortunes and our most sacred honor."

What could be more fitting than that we today, on this historic soil of Mecklenburg, pledge our lives, our fortunes and our most sacred honor to preserve that liberty more precious than life itself. Dark days are ahead. No one can predict with any reasonable accuracy what is in store for us. The medical profession of this country has a wonderful opportunity and a grave responsibility. We must not, and we will not fail.

THE RESPONSIBILITIES OF THE CIVILIAN PHYSICIAN IN THE PRESENT WAR EMERGENCY

BRIGADIER-GENERAL H. C. COBURN, JR.

The Surgeon

FORT BRAGG

I have been asked to address you today on the subject "The Responsibilities of the Civilian Physician in the Present War Emergency." I come to you with a certain degree of apology, because I thought that I had about exhausted this topic in the meetings of various county societies during the past three months. However, since certain changes have occurred in the requirements of the army for medical officers due to the progress of the war, I trust you may bear with me in bringing you up to date regarding the urgent and imperative need for medical men in the military forces and your responsibilities in connection therewith. I hope you will understand that I am speaking to you not alone as an army officer, but as one physician to others of the same profession. My job for most of the past forty years has been that of a doctor with duties and responsibilities similar to yours.

Fort Bragg is now one of the great posts of the Army, as regards both size and importance. I must say that after having lived all

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over the world I have found no area so well suited to the purposes of military organization and training as the Sandhills Section of North Carolina. The rolling terrain, the sandy nature of the soil—both of which insure splendid drainage—, the broad area available for troop concentrations, the adequate water supply and facilities for waste disposal, and the wonderful climate which allows year round training in the open all conduce to making it an ideal location for the soldier. I consider myself fortunate indeed to be in North Carolina during this highly important period of our country's military history.

This is a total war! It hits everybody! Someone has said that the bombing plane has made this the first democratic war in history. Now young men are not the only ones who fight and die "at the front." Now there is no "front." We are all in it to a greater or less degree. In this war civilians and soldiers alike are under fire⁽¹⁾.

Every possible available agency in the nation must be called upon if victory is to be assured. The Army, the Navy, the United States Public Health Service, capital, labor and industries of every type are being organized to meet the demands of war. Every man and every woman and even children will have to share the burden. The welfare of the individual will have to be subordinated to that of the nation as a whole.

From the earliest years of our country's history, physicians have been in the forefront, not only in the strictly professional sphere, but as leaders of men, as statesmen and as combat officers. The formation of the Medical Reserve Corps prior to the first World War insured the early procurement in that conflict of a large number of medical officers. These men assisted in the formation of medical units and in the training of physicians coming directly into the army from civil life. They rendered a wonderful service at home and abroad during the years of 1917-19. Since that time larger numbers of these officers, together with newly commissioned Reserve Officers, have kept contact with medical military progress by correspondence courses, training camps, and recurrent periods of active duty. When in 1941 the President declared the presence of a national emergency, large numbers of Reserve Officers promptly responded and have since that time been serving in many capa-

cities in many places. They helped to make possible the expansion of our army from 225,000 to 1,600,000 men in accordance with the 1941 program. Others are serving in the Navy, the United States Public Health Service, or in coordinated civil emergency agencies essential to national defense and offense.

You probably know that an army comprises various tactical units. The Infantry Division as it is now organized comprises three regiments with additional supporting troops. Two or more divisions form an army corps. Two or more army corps constitute an army. There is no single military unit, no matter how small, which can take the field, or even, with propriety and safety, march or be transported any distance without the necessary medical personnel, both commissioned and enlisted. The vital need for medical officers in any military expansion is, therefore, apparent. No army camp can be occupied without the essential medical facilities in personnel, buildings and supplies, and no division can begin to march against the enemy without proper medical support.

Besides the medical personnel attached to combat units, professional units are required for Station Hospitals, Evacuation Hospitals, Surgical Hospitals and General Hospitals. These organizations vary in size from a small number of beds up to 2000 each. They may be in the Zone of the Interior or in the Theater of Operations or in the Combat Zone. The commissioned personnel of these units, except for a few individuals, is entirely medical.

The Corps Area Service Command or Station Complement forms the housekeeping department of the army. It maintains the combat units in posts and training camps and requires a large number of medical personnel.

The War Department Overhead comprises officers and men necessary to maintain staff and office organizations at all non-tactical headquarters, such as the War Department bureaus in Washington and the various headquarters and subdivisions of the central offices of the nine Corps Areas in the United States. It also includes all the named general hospitals. These facilities also require large numbers of medical officers and men.

The mission of the Medical Department is "the conservation of man power or the

1. Brennan, F. H.

preservation of the strength of the military forces." This is accomplished:

- "a. By the selection and enrollment for military service, through properly conducted physical examinations, of only those men physically fit for the duties to devolve upon them.
- "b. By keeping such personnel in good physical condition through the application of modern principles of preventive medicine.
- "c. By furnishing those who do become disabled with such aid in the form of evacuation and hospitalization facilities as will speedily restore them to health and fighting efficiency."⁽²⁾

"The Medical Department keeps a constant watch on military installations to make certain that the soldier's surroundings are as healthful as the conditions under which he must perform his duties will permit. It advises commanders as to the measures necessary to preserve health and prevent and control disease. It also gives advice on the proper clothing for soldiers, the food required, the water supply, the location of camps and barracks as well as their condition, the hours and conditions under which the soldiers should work, the control of disease bearing insects, and other sanitary measures."⁽³⁾

Prior to combat the Medical Department must be prepared to make a fairly accurate estimate of the number and type of casualties to be expected and must advise unit commanders accordingly. Casualties vary with the military situation, the particular maneuver and the type of armament. In battle the proper care and disposition of the sick and wounded, with a view to retaining effectives and relieving the fighting forces of the non-effectives, are of primary importance. First-aid must be administered, and the transportable wounded assembled by collecting companies of divisions and moved from aid stations to the divisional clearing stations and from there to various hospitals in the rear. Appropriate treatment is rendered at each of these installations.

Besides the administration of military hospitals, dispensaries, hospital trains and similar establishments, the Medical Department is responsible for the preparation and

disposition of records and reports, the proper selection, classification and training of Medical Department personnel; the operation of a veterinary service for the army, including the care of animals and the inspection of meat, meat foods and dairy products; the procurement and storage, issue and maintenance of medical supplies, and the research and experimentation connected therewith; together with the preparation of photographic and similar records pertaining to sanitation, medical, surgical, and anatomical instruction and other activities of the Medical Department⁽²⁾. It is obvious that the performance of all these duties requires an enormous number of well prepared medical men.

To comply with the *minimal* military program for 1942 (expansion of the army to over three million men) there will be required 13,615 more physicians than are on duty at the present time.

Most of this increase in medical personnel is for: (a) tactical units and Air Force; (b) professional units for Theaters of Operations; (c) Corps Area Service Command and War Department Overhead. As the military situation develops further, and greater numbers of tactical and professional units are needed for various Theaters of Operations, these requirements will have to be correspondingly increased.

The shortage in medical officers is acute. Five thousand are needed for the army at once. With the exception of: (a) first year interns who will be placed on duty in July; (b) officers of upper field grades for whom there are no appropriate assignment vacancies at this time; and (c) a few officers whose active duty has hitherto been deferred, the organized reserve of medical officers has been exhausted. Vacancies that cannot be filled from the Officers Reserve Corps must be filled by physicians procured from civil life, who will receive appointments in the Army of the United States. The Army of the United States is the term used to designate the present "National Army", in which all temporary commissions are now made. If a sufficient number of officers is ordered to duty it is hoped to create "A War Department Officer Replacement Pool" of men on active duty. Officers would be placed on duty in this pool for a period of training prior to definite assignment to meet the requirements of new units and new installations. At present the shortage of

2. U. S. Army Regulations, No. 10-5, paragraph 2a, War Department, Washington, D. C., January 15, 1926.

3. Army Information Service.

officers is so great that the immediate creation of such a pool is impossible. Officers must now be sent direct from civil life to their assignments.

When the number of officers is sufficient, it is hoped to place them in pools as follows:

- a. Lieutenants without such classified professional qualifications as may justify their use for hospitals will be sent to the Medical Field Service School or to one of the three Medical Department Replacement Training Centers for tactical training and reassignment to tactical units. Eighty per cent of all medical officers commissioned will be in the grade of captain or lieutenant.
- b. Other officers whose qualifications indicate assignment to duty other than with troops will be sent to General Hospitals for training in medical military administrative procedures, and there or elsewhere for special professional training as necessary; these men will then be ready for reassignment to hospitals or similar installations of the Zone of Interior and to professional units of the Theater of Operations.

It is essential that physicians enter the Army of the United States as individuals. In this regard, it must be said that Selective Service is of considerable help. Physicians of draft age owe it to themselves and to their families to anticipate their being drafted by applying for commissions as medical officers; otherwise they may find themselves considerably embarrassed by being ordered to training camps as privates in some inappropriate branch of the army. In this connection, it has been decided that Selective Service will not consider dependency in the case of married men who may enter the army with a married medical officer's minimum pay of \$262.00 per month rather than with the \$21.00 of a selectee.

In the procurement of physicians, the Procurement and Assignment Service of the Office of the Defense Health and Welfare Service has been of inestimable value. The Medical Department of the army is responsible, however, for furnishing the qualified officers necessary to meet the requirements of the increasing armed forces. The army is making full use of the data available to the Procurement and Assignment Service

to determine a physician's eligibility for appointment, and his classification and evaluation. These data, age considered, will determine the grade in which a physician will be commissioned. The Surgeon General will not commission a physician unless he is certified as available by his State Chairman of Physicians for the Procurement and Assignment Service.

An Officers Recruiting Board has been formed in each state to obtain the names of available candidates for commission: (a) from the State Chairman of Procurement and Assignment Service, and (b) by direct contact. This Board will receive the applications of physicians, obtain the necessary physical examinations, and expedite the commissioning of candidates in the grade of lieutenant and captain. They will forward the completed papers on those qualified to the Office of the Surgeon General of the Army. For applicants concerning whom any doubt exists, for those who are apparently qualified in the grade above Captain and for those in the age group from 45 to 54, inclusive, they will also receive applications, obtain physical examinations, and forward the papers to the Office of the Surgeon General for final decision. Major Tatum of my office is the authorized President of the North Carolina Medical Officers Recruiting Board.

Because of the urgent necessity of expanding the officer personnel of the Medical Department, the War Department will now approve for appointment or for extended active duty individuals qualified for limited assignments who have certain physical defects which would have disqualified them under former physical standards, but which will not interfere with the satisfactory performance of the duties contemplated. The defects must be stationary in character and not likely to be aggravated as a result of active military service. Included among the conditions which will not debar a physician from limited service are certain degrees of overweight and underweight, complete blindness in one eye with proper correction in the other, or loss of one forearm or one leg, provided the lost member is replaced with a satisfactory prosthesis. Physicians with other conditions previously considered disqualifying may now be accepted for *full military service* provided a waiver is granted by the War Department.

There are now over 62,000 physicians

under 45 and about 27,000 between 45 and 55 in the United States. With increasing military needs, a large proportion of these will be called to duty with the Army or Navy or in some other service under Federal control. The care of the civilian sick, the staffing of hospitals and medical schools, and the maintenance of the public health must be the responsibility of the doctors remaining at home. These will have adjustments to make in the way of increased duties. They will probably have to delegate many of their responsibilities to others under their supervision, such as practical nurses or midwives.

The patient will have to come to the doctor. More patients will probably be treated in hospitals in order that larger numbers may be seen by a smaller number of physicians. Nursing and obstetrical homes will be established even in small villages to facilitate the services of the remaining doctors. All these problems will have to be solved by those left behind. The men in the service will not have time to solve the medical problems for civilians. In our own large military hospitals our young medical officers are now being constantly called from us for duty with troops in combat units. We are, therefore, planning to use many doctors with physical disabilities provided these do not interfere with the duties required.

Medical, dental and nursing schools should be, and many already are turning out trained individuals at a more rapid rate. Four years is too long a time for training when the need for medical graduates is so urgent.

Internships will be reduced to one year. As a matter of fact, it is possible that even this intern year may be omitted and compensated for by army experience.

Doctors are to a greater extent responsible for the complete care of patients in the army than in civil life, and physicians being called to military service should prepare themselves accordingly. The subjects of hygiene, sanitation, tropical diseases, nutrition and general preventive medical care are of special importance. Soldiers crowded in barracks or living in tents surrounded by open kitchens, pit toilets, or straddle trenches are subject to special hazards. Each physician in civil life should also refresh his knowledge of shock, battle casualties, gas casualties and similar subjects.

Physicians should now be planning to

sponsor and teach the medical aspects of first-aid training and home nursing care to the largest possible number of individuals in their communities. This work is now going on in all areas but it should be amplified to include as large a proportion of the population as possible.

Physicians should prepare themselves for army life by a process of physical seasoning, which can be begun at home, to toughen themselves physically and become accustomed to hardy outdoor living. Legs, arms and backs must be redeveloped and strengthened. An intellectual seasoning is of even greater importance. Spiritual preparation should be made for whatever sacrifice may lie ahead, even to death on the battlefield. Each of us may have to alter his previously conceived values of human life. Economic preparations should be made for prolonged absence from home and family.

Organized effort should be made to see that the total population appreciates and avails itself of complete medical care, including health instruction and preventive as well as curative care. This includes dental, nursing and hospital care. Many minor or self-limited illnesses now treated by physicians will have to be handled by mothers and grandmothers. There will not be enough physicians to visit all patients with mild disorders.

Physicians should lead in the effort to see that those rejected from military service because of remediable defects are rehabilitated. The correction of such defects among those not called to military service is equally important. While the problem is too big for county medical societies, these organizations should take the lead in working out the best plan for handling it. The early treatment of remediable defects should be encouraged, while qualified medical men are still available.

Physicians can promote adequate local public health service in each county. Preventive medicine will assume greater importance than ever, because of the shortage of doctors.

Summary

1. The nation's military requirement in man power is tremendous, and every physician is needed to perform some useful and indispensable task.
2. Return the Procurement and Assign-

- ment enrollment form and questionnaire which has recently reached you. If you fail to receive one, write immediately to the National Roster of Scientific and Specialized Personnel, 916 G Street, N. W., Washington, D. C., for your forms.
3. Get in touch at once with Dr. Hubert B. Haywood, Raleigh, North Carolina, your State Chairman of Physicians for the Procurement and Assignment Service, stating that you want to get into the service. Do this regardless of whether you have written to the Procurement and Assignment Service or Surgeon General or have enrolled on the emergency enrollment form of last December. If you applied for a commission more than thirty days ago, tell the State Chairman you want to see the Recruiting Board.
 4. Interns should apply for commissions in the Army of the United States, Navy or Naval Reserve.
 5. Hospital staff members under 45, including interns for 12 months, assistant residents, residents, junior staff members, and staff members, all are subject to the draft. Deferment may be temporary if at all. If they are not already holding commissions, steps should be taken at once to obtain them.
 6. All physicians under 45 are liable for military service. If they do not hold commissions they are liable to induction. They should be utilized in a professional capacity as medical officers. All doctors within the draft age should apply for commissions. If accepted by the draft they should nevertheless apply immediately for commissions. Wherever possible their positions in civil life should be filled by: (a) those over 45; (b) physicians under 45, physically disqualified for military service; (c) women physicians; (d) instructors and research men who do not have an M. D. degree. Eventually practically all physically qualified men under 37 will enter the service, and as this group can receive little in civil life to prepare them for their tasks with combat units, they should enter without prolonged specialty training. The sooner they learn their job in the Army the greater will be their value to the cause of their country.

7. All physicians over 45 should enroll. Those available for assignment to military, governmental, industrial or civil agencies may be asked by the Procurement and Assignment Service to serve these agencies. The maximal age for original appointment in the Army of the United States is 55; in the Naval Reserve it is 50.

Conclusion

We are engaged in a death struggle with a strong, well prepared, well trained and unprincipled enemy. He has great man power and plenty of highly modern and advanced equipment, and is making more all the time.

The need for medical officers is urgent. *This means the immediate enrollment of every physician capable of serving his country.* Business as usual is OUT!

America expects every physician to do his duty!

MEDICAL PREPAREDNESS IN NATIONAL DEFENSE

MAJOR J. W. ROY NORTON, M. C.

FORT BRAGG

The title of this informal discussion is misleading. I only intend to discuss some of the things that would be of interest to you men who might be called into service—some of the problems that might come up, some of the jobs that you might be assigned in modern military medical work. I will refer particularly to what we are trying to do at Fort Bragg.

The Fort Bragg reservation contains about 122,000 acres. It is approximately twenty-five miles east to west, and averages about eight or nine miles north to south. From a public health standpoint it is important that Fort Bragg largely controls its own watershed. The water supply comes from Lower Little River, and the water is of unusually good quality, because most of it is spring water coming from the sand hill springs. We are also fortunate in having just across the river from us the Rockefeller estate of 60,000 acres, with practically no inhabitants on it. That helps keep our watershed clean. There are a couple of impounded areas upstream from us also, which improve

the quality of the water by allowing contaminating matter in it to settle out or be acted upon by the sun.

In the sand hill area the water does not stand. It filters out rapidly. Fort Bragg is the biggest artillery camp in the world, and from the daily artillery firing many shell holes are dug. Yet water does not stand in them and the mosquito problem is not as bad as it might be otherwise.

We tend to think of the army as being tied up by red tape and thereby sometimes unable to function efficiently, but several incidents at Fort Bragg have shown it to be otherwise.

In trying to enlarge our water supply from a capacity of two and a half million gallons to around seven million a day, we needed a million gallon water tank. We couldn't get the steel promised in less than two hundred days; so the tank was built of concrete. It was finished before the time the steel was promised.

When we got ready to move into the new hospital around the middle of the winter, the boiler was not ready, and there was no heat available. We moved five locomotives down there, hooked up the steam pipes of the locomotives to the steam pipes of the hospital, and moved seven hundred patients into the hospital. Their rooms were well heated. That is another illustration of how the army solves technical difficulties.

The building program of over \$30,000,000 has been carried on very efficiently. The materials are stored in various convenient places around the area that is being built up, and are hauled out at night. Then the material is on the grounds the next day when the workmen come on the job.

To the old 100 bed brick hospital have been added a 1000 bed hospital in addition to the 1680 bed hospital, which can be rapidly expanded to 2,000 beds. One of the chaplains decided to find out how long it would take him to walk through all the corridors in this new hospital. He said it took him fifty-six minutes just to walk through them.

The barracks for the men are centrally heated. They are all subfloored and insulated. Some of you will recall that they are much superior to those we had in the last war.

You can readily understand that there have been many health problems that have arisen from expanding a regular post of 3,000 men up to 52,000. At one time we had

35,000 civilian workers, but we are down to 10,000 now. Consider just the simple matters of the water supply, of getting rid of the garbage, and of taking care of the communicable diseases.

The medical organization is headed by the chief medical officer of the post, Brigadier General Coburn. Under him there are medical corps, sanitary corps, dental, veterinary, medical administrative and nurse corps officers as well as medical detachment enlisted men and civilian workers. Insofar as possible the doctors are placed in work for which they have had most training, but it takes a few weeks or months to convert most practicing physicians into medical officers. The medical inspector, with his staff of six officers and with the enlisted and civilian assistants, corresponds to the public health department. The various regiments have their own medical officers and their own dispensaries, twenty-nine in all.

Hospital No. 1, with 112 beds, has 12 medical officers, 12 nurses, and 59 enlisted men. Hospital No. 2, with 1174 beds, has 85 medical officers, 188 nurses, and 730 enlisted men. Hospital No. 3 has 61 medical officers, 120 nurses, and 468 enlisted men. That makes a total of 158 medical officers and 320 nurses for the post. We are expecting around sixty to seventy thousand men.

We have right now around 1800 or 1900 patients in the hospital. We no longer assign men to quarters or assign them to light duty. They are either well and able to do complete duty, or they are in the hospital. The reason for this is that it breaks the morale to have some men doing nothing and some doing half work, when others know that some of these are just as well able to do work as they are. We get patients out of the hospital as rapidly as possible.

The headquarters section has general supervision over all the others, with the exception of medical supply and the medical inspector. Dental clinics are set up in various dispensaries and in two large dental buildings around the post. At the induction board the new men are examined by the various specialists. The examination includes urinalysis and an x-ray examination of the chest. Most of them have already had Wassermann tests done.

After the men have passed through the induction board they spend about three days in the Reception Center for classification,

to receive clothing, and for initial army instruction.

If you are in the hospital, you might be carrying out any of the specialties, or you might be assigned to what is known as non-medical administrative work. Many different types of work have to be done by medical men.

I hope I have given you a general picture of some of the problems at a post such as Fort Bragg.

Abstract of Discussion

Dr. Carl V. Reynolds (State Health Officer): Fort Bragg has shown us what organization really is and the far-reaching effect it can have on the personnel of the camp.

The malarial control program within that boundary is a gigantic problem that confronts the State Health Department as well as the Army.

Thirty million dollars is being expended within the boundary, but thirty million dollars expended within that boundary brings about a great many technical difficulties without the boundary. They are doing a wonderful job of taking care of the soldiers, with 158 doctors to 52,000 population.

Soldiers are under discipline from reveille to taps. When those soldiers get out from under control, they are going where they can find a place of entertainment or recreation. The people without and possibly within the boundary should prepare some places of amusement and recreation for the soldiers. Those boys are human beings; they want affection and attention and different food. We should see to it that they get them. Otherwise they are going to buy them, and where are they found? In houses of prostitution and in the pool rooms and the dives. Constantly we are carrying disease from the civilian population into the army, and then from the army back into the civilian population.

Fort Bragg is ideal compared to Holly Ridge and other communities where there was an increase from 28 people to 30,000 within a week or two, with no water supply or sewage system or even a place to sleep or eat. That is cruel. We should all put our efforts toward getting bills passed in Congress so that we can have money available to go forward before we have the catastrophe.

Col. Schwartz: As far as Fort Bragg is concerned, Dr. Norton has covered the problems admirably. Fort Bragg is supposed to be from the military standpoint probably the most difficult administrative problem in the medical way, not only because of its size, but because of three hospitals. That is one bad feature of the post. We are allowed so many medical officers, and with three different hospitals, there must be three different administrations. Each hospital has its own laboratory, its own surgical service, its own physiotherapy department, and so on, so that the medical personnel available for the specialized jobs is spread rather thin. The old hundred bed hospital is right in the middle of the post, and could not be expanded. Therefore, hospital areas had to be found somewhere in the center of the post, and there was no area available for a single large hospital. For that reason they had to select two areas and put up two hospitals.

I think we should all be proud of the medical corps at Fort Bragg, and to Dr. Norton should go a great deal of credit.

Dr. Ross in his talk yesterday said that the health of the military population reflects the health of the civil population, and that that could be reversed. It is fortunate that Fort Bragg is in an area where we have the cooperation of the local health officer, Dr. Foster. The army must depend upon health departments and health agencies in the surrounding territories. You can't control malaria if you stop at the edge of the reservation, and you can't control venereal disease within the reservation at all. The recreational areas have to be under civil authorities, and we depend upon outside agencies for the health of our own post.

Lieutenant Plummer: My angle is the venereal disease work. We have been able to reduce the relative rate of venereal diseases about 50 per cent within the last two or three months. About four months ago we had around 150 cases of gonorrhea, with 20,000 troops, and now with 50,000 to 55,000 troops, we have about the same number. We attribute that, of course, primarily to prophylaxis. With 20,000 troops, we were running about 100 to 800 prophylaxes a month, while with 55,000 troops, it is running about 3,500.

Dr. Norton: I wish to thank those who have taken part in the discussion. You might be interested in some of the causes for rejection at the induction station. The leading causes for which the men are turned back are flat feet and other deformities, tuberculosis and other chest troubles. In the last two months we have had five diabetics turned down. In one case the patient had taken insulin just before he turned in his specimen. Of course, he turned in a satisfactory specimen and got by. A lot of them pull all kinds of tricks to get in, and a large number, I am afraid, pull all kinds of tricks to get out.

On the whole the communicable disease situation has been very favorable. I attribute that partly, of course, to good fortune. The influenza epidemic was not as bad as it might have been. We have had 335 cases of mumps, 214 of measles, 1,080 of German measles, 10 cases of scarlet fever, 15 cases of chicken pox, 2 cases of cerebrospinal meningitis. Our venereal disease rates under Lieutenant Plummer have been the best in the Fourth Corps area. The Fourth Corps area with its large Negro population is the worst in the country. We have had unusually good cooperation from Dr. Foster, the county health officer, and from the State Board of Health.

The State Board of Health has helped us on our housing situation and on our malarial control problem. They have consulted with us on our venereal and communicable disease problems.

Tuberculosis in Your Community. One physician lives and works in a tuberculosis saturated community, another in a community with a low incidence. One has a heavy practice among groups afflicted with high tuberculosis rates, another does not. One sees many patients from low economic brackets, another from the higher income brackets. One has patients coming to him from industries with more than a normal incidence of the disease, another sees only a few of them. How many physicians have informed themselves of the tuberculosis rate of their community? How many have analyzed the social and economic make-up of their own practice? How many, having done so, have considered their opportunity and obligation for watching for the particular tuberculosis hazards of their patient load? A. A. Playte, M.D. and Harold Holand. *Journal-Lancet*, Apr. 1942.

THE TREATMENT OF ENDOCRINE STERILITY IN WOMEN

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Endocrine sterility in woman results from inadequate ovarian function. The causes of ovarian failure are diverse in nature, and the degree of functional impairment varies. Rational therapy is possible only when it is based upon a secure diagnostic segregation of etiologic factors. Organotherapy does not constitute the only method of treatment of ovarian failure.

Clinical Classification of Ovarian Failure

For clinical purposes four general types and degrees of ovarian failure may be recognized:

(1) *Failure characterized by the discharge of ova incapable of fertilization or of normal embryonal development* ("blighted ova"). No impairment of the endocrine function of the ovaries necessarily occurs in these cases.

(2) *Failure characterized by inadequate corpus luteum function.* Ovulation and discharge of the ovum in these cases are followed by the secretion of amounts of progesterin by the corpus luteum inadequate for satisfactory prenidatory preparations of the endometrium. The secretion of progesterin may be of normal duration but deficient in amount or it may be of too short duration—that is, short corpus luteum phase. This type of failure does not interfere necessarily with the fertilization of the ovum, but it may render implantation difficult or result in early abortion.

(3) *Failure characterized by the non-occurrence of ovulation and the absence of the corpus luteum phase.* While the estrogenic functions of the ovaries may not be impaired and no alterations may occur in the rhythm and amount of uterine bleeding, follicular maturation may fail to terminate in ovulation, the ovum remaining imprisoned in the follicle, which eventually undergoes cystic and atretic degeneration. Since no ovulation occurs, no post-ovulatory corpus luteum forms and the progestational phenomena of the cycle are missing.

Uterine bleeding occurs from estrogenic (interval) endometria rather than from progestational ones.

(4) *Estrogenic failure.* This is the most severe grade of ovarian failure. There is inadequate follicular activity to secrete sufficient estrogens for sexual development and maturation (if failure is primary) or for maintenance of functional adequacy of the genital organs (if failure is secondary). Genital hypoplasias and amenorrhea or infrequent episodes of bleeding characterize this failure. Estrogenic phenomena are decreased in degree; ovulation does not occur; progestational alterations are absent.

Etiologic Classification of Ovarian Failure

Impairment of ovarian function may be produced by conditions intrinsically non-endocrine in nature which have indirect effects upon glandular functions, and by primary endocrine diseases or functional aberrations.

I. *Causes intrinsically non-endocrine in nature:* Representative of this group are conditions which impair constitutional efficiency, such as acute and chronic illnesses; disturbances in the hematopoietic system resulting in anemia; chronic intoxication and poisoning; inanition and vitamin deficiencies; obesity due to relative food excess; emotional and psychic crises; and changes in altitude and climate. The ovarian impairment sequential to these causes may be due to subsequent alterations which occur in gonad-activating (gonadotropic) functions of the pituitary, or to direct effects on the function and metabolism of the ovaries.

II. *Causes primarily endocrine in nature:*

(1) *Intrinsic ovarian failure:* Factors which may render the ovaries incapable of yielding normal responses to pituitary influences are: (a) developmental inadequacy, (b) incomplete puerperal recovery, (c) local pelvic disease, (d) premature senescence, (e) physiologic immaturity or senility, (f) damage from roentgen-ray or radium, or (g) removal by surgery.

(2) *Ovarian failure due to hypofunction of the pituitary:* In these cases the pituitary secretes inadequate gonadotropins (gonadal-activators) for the induction of normal ovarian responses. The deficiency of pituitary function may be due to damage by tumors or cysts, invasions, intrinsic inadequacy or untoward peripheral factors (non-endocrine causes).

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(3) *Ovarian failure due to pituitary alterations, induced by disturbances in other glands (thyroid or adrenal):* Diseases of the thyroid (hypothyroidism and hyperthyroidism) and of the adrenal (Addison's disease and adrenogenitalism), may alter the gonadotropic function of the pituitary, in addition to their other effects on ovarian function.

(4) *Ovarian failure due to diabetes mellitus:* The ovarian failure of diabetes mellitus may occur in two ways: from the pituitary depressing effects of the disturbed metabolism and the cachexia precipitated by the disease; and from the local effects of arteriosclerosis upon ovarian blood supply in cases of long standing.

(5) *Ovarian failure due to alterations in metabolism sequential to diseases of the thyroid or adrenals.* The disturbed oxygen metabolism of thyroid disease or the altered water and electrolyte metabolism of hypocortical adrenal disease may alter the local metabolism of the ovaries, thereby impairing function.

(6) *Ovarian failure due to gametopathic factors:* The endocrine disturbances listed above, intrinsic germinal inadequacy, or the local germinal effects of constitutional impairment may result in the discharge of ova incapable of fertilization or of normal embryonal development.

(7) *Ovarian failure due to endometriopathic factors:* The endometrium, an important link in the ovario-pituitary system, may fail to assure normal metabolism and utilization of the sex steroids, because of functional failure or damage by disease, surgery or radium. The ovarian failure under these circumstances may be *apparent*, the result of inefficient utilization of the hormones, or *real*, the result of the pituitary altering effects of retained products of incomplete hormone metabolism.

Any of these etiologic factors just described may produce varying modifications in ovarian functions, resulting in any of the four different types and degrees of ovarian failure.

Relative Incidental Importance of Etiologic Factors

A consideration of the relative incidence of the various etiologic factors is advisable, in order to obtain a satisfactory perspective for discussion of therapeutic measures.

The majority of women who seek medical

counsel and aid because of inability to become pregnant have no serious endocrine disease and exhibit no striking endocrine signs. The usual causes of ovarian sterility are:

(1) Errors of general metabolism and nutrition, resulting from inadequate or excessive food intake, from errors of food absorption and metabolism, and from cachexia caused by chronic intoxications, and acute or chronic illnesses.

(2) Hypothyroidism.

(3) Intrinsic ovarian failure.

(4) Endometriopathic factors.

(5) Functional disturbances in the pituitary.

Diagnosis

The diagnosis of the various degrees of ovarian failure is relatively easy, as a rule. We have, however, no means of determining the health or disease of the ovum; the diagnosis that the ova are incapable of fertilization or of normal embryologic development must be a presumptive one, suggested by the history and by negative diagnostic data in women none the less sterile.

Inadequate corpus luteum function is indicated by the occurrence of incomplete or irregular progesterational proliferation of the endometrium at the onset of bleeding (as judged from microscopic studies of biopsies taken within twelve to eighteen hours after the beginning of bleeding and by marked irregularities in the duration and amount of pregnandiol excreted in the urine. (Pregnandiol is a metabolic product of progesterin.)

Failure of ovulation and of subsequent corpus luteum activity is suggested when repeated biopsies of the endometrium taken at the onsets of successive episodes of bleeding reveal an estrogenic (interval) status rather than a progesterational one.

Estrogenic failure of significant degree is recognized by the hypoplasias or regressions present in the various components of the sexual system. Endometrial and vaginal biopsies yield complementary data.

Diagnostic segregation of the etiologic factors in ovarian failure may be possible after a painstaking history and careful medical, gynecologic and endocrine surveys. Often, however, in cases of pituitary inadequacy, intrinsic ovarian failure and endometriopathic disturbances the differential diagnoses are possible only after properly con-

trolled therapeutic trials of certain endocrine regimes.

Treatment

The therapeutic handling of the non-endocrine cases of ovarian failure is conditioned by the nature of the individual etiologic factor. Correction of the exciting cause under these circumstances usually is followed by satisfactory re-adjustments in endocrine functions. Such common and ordinary measures as increase or reduction in weight, liberal quantities of iron in anemia, and removal of foci of infection may be followed by significant enhancement of ovarian function.

The treatment of intrinsic ovarian failure in most cases is unsuccessful in overcoming sterility. No matter how effective substitutional ovarian therapy may be in correcting the endocrine failure of the ovaries, it is obviously incapable of affording substitution for the germinal failure. Only when the type of failure is self-limited in nature, as in immaturity of the ovaries or delayed puerperal recovery, or when it is due to local pelvic factors such as infection and congestion can recovery of full function be anticipated from appropriate therapeutic measures. The serious import of this type of failure should emphasize the wisdom of prophylaxis and conservative gynecologic procedures: the prevention and conservative treatment of pelvic infections and the avoidance of surgical and roentgenologic damage to the ovaries will eliminate many cases of this type. When this type of failure exists, attempts to stimulate ovaries with various gonadotropic extracts fail, owing to the existence of the same refractoriness which prevents these ovaries from responding to the influences of the patient's own pituitary.

When ovarian failure is due to primary disturbances in the gonadotropic functions of the pituitary gland, the use of gonadotropic substances constitutes rational and often effective therapy. Our regime for gonadotropic therapy is summarized as follows:

Since this therapy embraces the cyclic employment of equine⁽¹⁾ and chorionic⁽²⁾ gonadotropins in the order named, we have called it *one-two cyclic gonadotropic therapy*.

1. Representative commercial preparations of equine gonadotropin are: anteron (Schering Corp.); gonadon (Cutter Laboratories); gonadogen (Upjohn).

2. Representative commercial preparations of chorionic gonadotropin are: APL (Ayerst, McKenna & Harrison); antuitrin-S (Parke-Davis & Co.) and follutein (Squibb).

apy. Preliminary skin testing for possible allergy is done before equine gonadotropin is used. Equine gonadotropin in daily intramuscular doses of 400 to 800 international units is given for ten days, therapy beginning at the end of bleeding. During this part of therapy several bimanual examinations should be done to be sure that no untoward cystic changes occur in the ovaries. Immediately following the equine gonadotropic therapy, chorionic gonadotropin in daily intramuscular doses of 500 to 1000 international units is given for the next ten days. Therapy is discontinued when bleeding begins.

An endometrial biopsy is done at the onset of bleeding. If a progestational response is encountered, the assumption is warranted that a normal ovarian response was induced by therapy. (If ovaries are receptive, a positive response usually occurs from the first series of therapy.) When a positive response has been obtained, no further therapy is given until the endometrial response at the next episode of bleeding (preceded by a cycle of no therapy) is sampled. If a progestational response is obtained at this time, it is assumed that the ovaries have resumed normal spontaneous cycles.

Patients who yield positive responses during therapy, but not after discontinuation of therapy are given from time to time a series of injections, followed by one or two months of no treatment, and attempts are made to secure a pregnancy. In pregnancies secured by this form of therapy abortions are apt to occur as a result of intercurrent ovarian failure. Patients under these conditions should be treated as though they had had previous repeated abortions; ovarian substitutional therapy with estrogens and progesterone should be given during the pregnancy.

Patients who do not respond to the first series of cyclic gonadotropic therapy are given another similar series. If they do not respond to this, it is assumed that no pituitary deficiency exists as the cause of their ovarian failure.

When ovarian failure results from pituitary disturbances secondary to disturbances in the thyroid or adrenals, the nature of these primary disturbances indicates the course and conditions the effectiveness of therapy. Medical, surgical or roentgenologic treatment in cases of hyperthyroidism

and ample administration of potent thyroid substance in cases of hypothyroidism are followed usually by a return of satisfactory ovarian function. In the treatment of endocrine sterility, one should not rely too much on the results of basal metabolism studies. Minor grades of hypometabolism, which are characterized by no classical signs of myxedema, may result in significant impairment of ovarian function. It is a wise procedure to give all sterile women in whom no absolute cause for sterility has been found a full therapeutic trial of thyroid substance, even though their basal metabolic rates are not low. Some patients in whom there is no indication of impairment of the endocrine functions of the ovaries become pregnant when thyroid substance is administered; such occurrences suggest the likelihood that this therapy results in the formation of healthier ova.

Adequate treatment of hypocortical adrenal syndromes (Addison's disease) with potent cortical extracts or desoxycorticosterone acetate, and the effective surgical handling of selected cases of adrenogenitalism may permit a return of normal ovarian function.

When ovarian failure is due to gametopathic factors, the nature of these factors indicates the appropriate therapy and conditions the response.

When ovarian failure is due to endometriopathic factors, the success of therapy depends on the nature and degree of endometrial involvement. When the endometrium has been damaged extensively by disease or irradiation, no effective therapy exists. When endometrial inadequacy is due to functional alterations, curettage may be beneficial in some cases. We have found the use of cyclic estrogen-progesterone therapy to be successful frequently in overcoming endometrial inadequacy and in effecting a return of normal ovarian function.

The details of cyclic estrogen-progesterone therapy are as follows: Several initial series of the following order are given: Estradiol benzoate⁽³⁾, 0.3 mg. (2000 rat units), is given intramuscularly every other day for ten days, beginning immediately at the conclusion of bleeding; estradiol benzoate, 0.3 mg. (2000 rat units) and proges-

terone⁽⁴⁾, 5 mg., are given every other day for ten days, directly following the antecedent estrogenic therapy. Treatment is discontinued when bleeding begins and is resumed when bleeding ceases. After several such series have been given, additional cyclic therapy of the following order is given: Estradiol benzoate, 0.3 mg. (2000 rat units), and progesterone, 5 mg., are given intramuscularly every other day for ten days, beginning ten days after the cessation of bleeding. Treatment is discontinued when bleeding occurs. These series are continued until the endometrium, sampled by biopsies, shows a good progestational response at the onset of an episode of bleeding. All treatment is then discontinued and the endometrial response of the patient at the next episode of bleeding is sampled; if this, in the absence of any immediate antecedent therapy, shows a progestational response, it is assumed that therapeutic salvage of ovarian function has been secured.

Summary

Endocrine sterility has been defined as being due to primary or secondary disturbances in ovarian function. Classifications of degrees of ovarian failure and of etiologic factors producing ovarian failure have been given. The more common causes of endocrine sterility have been listed and some clinical aids in the diagnosis of these have been outlined. Various therapeutic measures have been discussed and schedules employing gonadotropins and estrogens and progesterone have been described in detail. The conclusion is drawn that by judiciously applied therapy many women with endocrine sterility may be given the reproductive function.

1. Representative commercial preparations of progesterone include: proluton (Schering Corp.); progestin (Lilly), and Intocylin (Ciba).

3. Representative commercial preparations of estradiol benzoate include: progynon-B (Schering Corp.) and benovocilin (Ciba).

The Parenteral Use of Iron.—The parenteral use of iron should be mentioned merely to discourage it. Heath has stated that injected iron may be very toxic in doses approaching therapeutic value. The parenteral administration of 25 milligrams which, if entirely utilized, will elevate the hemoglobin level only about one per cent, may cause severe local reactions, as well as nausea and vomiting. If necessary to employ this method, a ten per cent solution of ferric ammonium citrate may be injected intramuscularly in doses not exceeding one cubic centimeter.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, *Minnesota Medicine*, 23:715 (October) 1940.

A FEW REMARKS ON THE TREATMENT OF FRACTURES

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With our entry into a second World War which has already eclipsed World War I in violence, it is most appropriate to discuss the subject of fractures, which forms such a large part of military medicine. The tempo of war has increased, and there has been a corresponding increase in casualties. The incidence of fractures is from 75 to 80 per cent of the casualties. It is unlikely that civilian casualties in this country will equal those in England; however, they may be high in some sections. Every doctor should now be prepared with the best and latest available information on the care of the wounded, and especially on the treatment of fractures.

Before presenting some thoughts on the improved technique of fracture care, I should like to review a few basic principles.

As the result of the trauma causing the broken bone, there is first hemorrhage and then destruction of soft and bony tissues. Within a few hours there is an accumulation of serum and fibrin in the tissues which interferes with the normal circulation of both capillaries and lymphatics. There is also a lowering of the pH, so that the tissues in this area become acid. This acidity causes a progressive decalcification of the ends of the bone fragments. The hemorrhage and fibrinous exudate surround and connect the bone ends, and fibroblasts soon appear. With the formation of new capillaries, the circulation is reestablished. The engorgement and stagnation disappear. The destroyed tissue and cells are carried away and the pH increases. As this occurs, the phosphatase becomes active, causing a deposition of unprecipitated calcium which during this time has accumulated in the tissue network. This is the first evidence of callus formation. If by chance the embryonic connective tissue cells and fibrin network become differentiated into adult connective tissue before phosphatase activity starts, no deposition

of calcium takes place, and a fibrous union results. The calcium deposits may make their appearance in the form of a lace-like mesh as early as seventy-two hours after the injury, but are seldom grossly perceptible in the surrounding tissue before ten days. The callus of a diaphyseal fracture with a normal healing process becomes clinically firm and then compact at approximately the twenty-fourth to the thirtieth day. The bony union, however, is not firm until eight to twelve weeks, and the normal architecture of the bone is not restored before nine to twelve months.

Thus it can be seen that new bone formation associated with fracture repair is a delicate biological and biochemical process and one which follows an orderly pattern and sequence. If this pattern is altered or disturbed with too frequent manipulation, a delayed union or non-union may result. It is most important to have a definite plan for treating the fracture and to follow it through to the best of your ability. As a rule, the treatment of any fracture should be constantly and entirely under the guidance of one man. Too often divided responsibility leads to a poor result. Promptness in treatment (an acute fracture is an emergency), gentleness in handling and thoroughness in carrying out the details are all necessary for a successful result.

Experience over a long period indicates that the simpler methods produce the best results in the greatest number of patients. If you have obtained good functional results by using one method, do not discard it because you want to try something new. It is always wise to remember that the method of treatment should be adapted to the circumstances and equipment at hand. Your best equipment, however, is not physical but mental—namely, a thorough understanding of the principles of treatment. This requires a knowledge of (1) the technique of reduction, (2) the uses of traction, (3) the most efficient types of immobilization and (4) the proper time for motion and weight bearing.

It should be remembered that the treatment of a fracture is only one part of the treatment of the patient as a whole, and that the goal of all fracture therapy is the preservation of life, limb, function and contour, in the order named⁽¹⁾.

Plaster is still the best splinting material

¹Presented as one of a series of lectures in the Post-Graduate Course in Medicine sponsored by the Extension Division of the University of North Carolina, Kinston, March 4, 1942.

1. Eliason, E. L.: General Considerations in Fracture Treatment, S. Clin. North America, 20:1597-1611 (Dec.) 1940.

available for support and immobilization. Every physician should be familiar with its uses, but also should know its limitations. Most of the "store" splints advertised so extensively are dangerous in the hands of the average physician treating a complicated fracture. Intricate charts and directions for the use of these splints give a false sense of security to the doctor. There is a rude awakening when a bad deformity results following their use. Griswold⁽²⁾ has truthfully said, "It's the doctor behind the splint and not the splint that counts."

Every doctor should recognize his limitations. If in doubt about his ability to treat a fracture, he should seek assistance or consultation early and refer the case at once to a more experienced colleague⁽³⁾. P. D. Wilson has made a statement in this connection which deserves reflection: "Bad results have the unpleasant habit of coming home to roost conspicuously upon the doorstep of him who has been responsible for the treatment, and in the layman's eyes, anything short of complete functional recovery represents permanent crippling."

Unfortunately, with the more general use of the x-ray, and the importance attached to the appearance of the roentgenograms, the physician may make the mistake of allowing these to become the sole guide to treatment. The roentgenogram showing poor anatomic position is often examined by the claim agents and insurance adjusters, and frequently taken into court and presented as evidence against the doctor without consideration of the many other factors in the patient's physical condition which the doctor had to consider before deciding upon the best form of treatment. Because juries award damages when they observe a gross deformity in the plaintiff, and see a poor anatomic result in the roentgenogram, the average physician becomes panicky when the x-ray film does not show the fragments in perfect position after reduction.

I firmly believe in explaining in great detail to the patient and his family in the presence of a witness exactly what the possibilities are, both favorable and unfavorable, in the care and outcome of a bad fracture. It is always wise to suggest a consultation, and best to have a written record on

the patient's history of what the patient and his family have been told. This is your best protection against the demands of an unscrupulous lawyer and best defense in a malpractice suit. If a poor result does occur, this previous explanation should soften the patient's bitterness toward the attending physician.

There have been many advances in fracture therapy in recent years. Some of the new techniques may still be on the unorthodox list. It takes time—at least one decade, it has been said—for a new method of treatment to become orthodox and be generally accepted by the medical profession.

The following are some of the more significant recent developments in the methods of fracture care:

Compound Fractures

Certainly one of the great miracles of medicine during the last decade is the astounding effect of the sulfonamide drugs upon infection. Pneumonia and septicemia are no longer to be feared. The incidence of acute osteomyelitis is definitely less and there is an appreciable decrease in the number of bad results of compound fractures. The statistics given on the casualties in the Pearl Harbor disaster are almost unbelievable. Perrin H. Long⁽⁴⁾ reported that he and I. S. Ravdin examined approximately 250 casualties with open wounds, including 100 to 150 compound fractures, in Hawaii one week after this disaster. All open wounds had been treated by a debridement and direct application of sulfanilamide crystals. In addition, the patients had been given 60 grains of sulfathiazole by mouth each day. In this group there were head, chest and abdominal injuries as well as compound fractures. Seven weeks later these same patients were examined in California and there were no cases of osteomyelitis or other serious infections. Moorhead⁽⁵⁾, commenting on all the casualties, states: "Purulent exudate was practically absent . . . The results were better than I had ever seen during nineteen months in France when serving with the French, Belgian, and American medical formations."

In the Navy the compound fractures of the long bones were immobilized in plaster after debridement and reduction, while in the Army traction was used for these frac-

2. Griswold, R. A.: *The Principles of the Treatment of Fractures*, Kentucky M. J. 37:427-433 (Oct) 1939.

3. Owen, H. R.: *What are the Duties and Responsibilities of the General Practitioner in the Treatment of Fractures?* Texas State J. Med. 85:663-672 (Feb.) 1940.

4. Long, P. H: Personal communication, February, 1942.

5. Moorhead, J. J.: *Surgical Experience at Pearl Harbor*, J. A. M. A. 118:712-718 (Feb. 28) 1942.

tures after the initial treatment. Incidentally, there were no cases of tetanus observed among this group of service men, all of whom had been given tetanus toxoid.

The closure of compound wounds is always a debatable question^(6, 7). In the Pearl Harbor disaster very few of the compound wounds were closed, even though sulfanilamide crystals were placed in them. Before the general use of sulfonamides many surgeons advocated closure after complete debridement had been done and the wound washed out with saline and saturated with an antiseptic. Results were satisfactory in most instances, but there was always some doubt as to whether this was the best procedure.

Local Anesthesia

In recent years there has been a more general use of local anesthesia in the reduction of fractures. Novocain has been used, injected directly into the fracture site. The novocain not only reduces pain, but also causes a muscular relaxation. When the patient is fully conscious, he can often help the surgeon in the reduction of the fracture. Eliason⁽¹⁾ reported that in the University of Pennsylvania Hospital, with more prompt attention to reduction of fractures in the accident room, and with the use of local anesthesia, the percentage of successful primary reductions increased from 43 to 85.

Open Reductions

In a few large clinics, such as the Presbyterian Hospital in New York⁽⁸⁾, emphasis has been placed upon early open reduction with internal fixation in all fractures of the long bones. This procedure is quite satisfactory in the hands of the specialist in the large clinic, but is certainly not to be advocated as a general procedure for the physician to employ.

Before performing an open reduction one must consider the functional rather than the anatomic result. Over-enthusiasm for a good anatomic result too often leads to a poor functional result. The Frenchman, Lucas-Championniere, said sixty or more years ago that the healing of a fracture was only a means to an end; that the primary

goal was restoration of function; and that it was much better to have a crooked limb with flexible joints than a straight limb with stiff joints and poor function.

Before proceeding with any open reduction, be certain that a good functional result cannot be obtained with a closed procedure. Be sure of your technique, have the proper instruments and apparatus for internal fixation at hand, and do what you plan quickly, effectively and with the least amount of injury to the tissues and circulation. It takes longer to secure bony union after open reduction, so the support must not be removed too soon.

Fractures of the Humerus

The hanging cast method of treating a fracture of the humerus is a great improvement over the methods employing a Jones humeral splint or shoulder spica. With the use of a hanging cast, little supervision is needed after reduction and there is only a small amount of discomfort. Statistics on the method are most convincing. Hudson⁽⁹⁾ reports 300 cases with two failures. Treatment extended over a period of eight to ten weeks. Griswold⁽¹⁰⁾ and others report 128 cases with one non-union.

The technique of the method is to apply circular plaster from the upper arm to the mid-palm, with the elbow at a right angle and the forearm in a midposition. The position of the forearm is changed in fractures at the lower third to full pronation and in fractures of the external condyle to full supination. The cast may be padded or unpadded, and is applied with the patient in the sitting position after the fracture is reduced. The cast hangs free of the body, with the hand higher than the elbow. The patient is warned not to rest his arm on chairs or tables and to sleep in a semi-reclining position for the first seven to ten days, with a pillow underneath the arm. In this way the humerus should hang vertically. After one week, circumduction of the shoulder is started. Solid union of the fracture fragments usually takes place in the normal time. It should always be remembered that correct length and alignment are not essential for good function following fractures of the humerus.

6. Cannaday, J. E.: Primary Closure of Traumatic Wounds with Special Reference to the Conversion of Compound into Simple Fractures, *Am. J. Surg.* 47:375-393 (Feb.) 1940.
7. Kennedy, R. H.: Present Day Treatment of Compound Fractures, *Ann. Surg.* 113:942-954 (June) 1941.
8. Murray, C. R.: Timing of Fracture Healing Process: Its Influence on Choice and Application of Treatment Methods, *J. Bone & Joint Surg.* 23:598-606 (July) 1941.

9. Hudson, R. T.: The Use of the Hanging Cast in Treatment of Fractures of the Humerus, *South. Surgeon* 10:132-134 (Feb.) 1941.

10. Griswold, R. A., Goldberg, H. and Joplin, R.: Fractures of the Humerus, *Am. J. Surg.* 43:31-38 (Jan.) 1939.

Fractures of the Shaft of the Femur

Balanced traction, first described by Russell⁽¹¹⁾, of Australia, in 1921 for fractures of the femur, has not been sufficiently emphasized in fracture teaching. In this form of treatment the axis of the femur becomes the resultant of the parallelogram formed by the lower leg and rope to the overhead pulley. The pull along this resultant is double the amount of weight used, which should be 8 to 12 pounds for the adult and 5 to 8 pounds for the child. It is important with this method that the knee be kept at a 20 to 30 degree angle with the thigh, which should form an angle of 10 to 15 degrees with the bed. The hip should be in about 15 degrees of abduction. A soft pillow should always be placed under the thigh. This position puts the muscles of the lower extremity at rest. The patient should be kept perfectly flat in bed, with a small pillow under his head. It is absolutely necessary that there be constant supervision of the traction, especially during the first few days.

Lewis⁽¹²⁾ reports the treatment of 143 cases of fracture of the femur with this method on the fourth surgical service of the Bellevue Hospital over a period of nine years. The results were considered good in 138 cases or 96.5 per cent.

Murray⁽¹³⁾ believes that, following a fracture surrounded by muscle, as is the case in fractures of the femur, the normal elasticity of these muscles is rapidly lost because of the infiltration of the tissue with hemorrhage, exudate and fibrin. Once this has taken place, the muscles cannot be stretched with traction. He is emphatic in his belief that no traction applied later than four to sixteen hours following a fracture is as effective as it would be before this time. He uses the term "congealing" of the musculature. I believe that such is undoubtedly true, and that any fracture in which the traction cannot be applied sooner than twelve hours after the injury is not ideal for either a balanced or a skeletal traction suspension method of treatment.

In recent years there has been a great deal of attention to the pin fixation method of treating fractures of the femur and of

other long bones. The Roger Anderson apparatus is the oldest and most frequently used for this purpose. The Haynes apparatus⁽¹³⁾ has been used with great success in the American Hospital in Britain. In some Philadelphia hospitals a Stader apparatus⁽¹⁴⁾ is being used which has stainless steel pins covered with a duPont plastic material which is non-irritating to the tissues. Experience with these apparatuses in many clinics shows that: (1) the introduction of pins into the bone very seldom, if ever, is accompanied by an infection, and any infection that occurs can be controlled by the use of one of the sulfonamides; (2) the apparatus when properly applied can reduce and immobilize a fracture; and (3) apparently there is no disturbance in the reparative processes of the bone. The greatest advantage is that the patient is ambulatory from the beginning. This is of great importance in War in the transportation of the wounded. When the apparatus is correctly applied, there is a vise-like fixation of the fragments.

Fractures of the femur in children usually are not difficult to treat. Left alone and given an opportunity to heal, most will unite very quickly. Overriding of moderate degree is never an indication for open reduction. As much as two inches of shortening of a fractured femur in a child under 12 will be overcome during the subsequent years of the child's growth. Angulation, which is not difficult to correct in the early stages of treatment, is to be guarded against. LeMesurier⁽¹⁵⁾, of Toronto, has recently described two very satisfactory and simple methods of treating such fractures in children. In the first method, for children under 2 years of age, both feet are suspended to an overhead frame without the use of pulleys and weights. The child's body is the counterweight which reduces the fracture and maintains the position of the fragments. For children over 2 years, the patient is placed on a Bradford frame, with the leg in a Thomas splint. The foot of the frame is elevated to a height equal to one-third its length. The end of the Thomas splint is tied to the end of the bed, so that the child's body acts as a counterweight. After four

13. Ferguson, W. R.: Personal communication, March, 1942.

11. Russell, R. H.: Fracture of the Femur, a Clinical Study, Brit. J. Surg. 11:491-502 (Jan.) 1924.

12. Lewis, K. M.: Russell Traction in the Treatment of Fractures of the Femur, Ann. Surg. 113:226-244 (Feb.) 1941.

14. Stader, Otto: Suggested Procedures for the Treatment of Fractures with the Stader Reduction Splint. Privately printed by Sun Instrument Co., Wynnewood, Pa., 1942.

15. LeMesurier, A. B.: The Treatment of Fractures of the Femur in Children, Am. J. Surg. 49:140-146 (July) 1940.

weeks the patient is immobilized in plaster for approximately six weeks. Occasionally, if the fracture fragments are not in good alignment, especially in fractures of the lower third, it may be necessary to apply a Hodgen splint, which allows the knee to be bent, and to which splint slings may be applied to maintain force in a given direction. LeMesurier⁽¹⁵⁾ reports excellent end results in 200 children treated by these two methods for fractures of the femur at the Hospital for Sick Children, in Toronto. In addition, there were 3 fractures which required an open reduction because of the interposition of muscle between the fragments, and 13 which required the use of Kirschner wires. Fourteen, or 6.5 per cent of these children were under 2 years; 202, or 93.5 per cent were over 2 years. I believe that the occasional malunion following this fracture in childhood is due to incorrect position and alignment of the extremity during the period of immobilization and to weight bearing without protection before the fracture has united sufficiently.

Fractures of the Neck of the Femur

Undoubtedly the best method of treatment for this type of fracture until the use of nails and pins was introduced was the Whitman abduction cast method, with the Lead-better modification of Whitman's technique in reduction. Good results were obtained in 50 to 60 per cent of the cases. With the use of the Smith-Petersen nail, the Moore pins and their modifications, this percentage has been increased. The Fracture Committee of the American Academy of Orthopaedic Surgeons⁽¹⁶⁾ reviewed 241 cases from many different clinics; there was union in 70 per cent. Many enthusiastic users of the nail and pin method for treating fractures of the hip claim a much higher percentage. So far, however, the observation of impartial observers has not justified a more optimistic report than that given by the above Fracture Committee. The application of a pin or wire for a fractured hip should never be attempted by one lacking instruction and experience, for improper use of the method too often leads to a poor result.

16. Report of the Fracture Committee of the American Academy of Orthopaedic Surgeons: Treatment of Fractures of the Neck of the Femur by Internal Fixation, *J. Bone & Joint Surg.* 23:3:6-390 (April) 1941.

Fractures of the Spine

I formerly was of the opinion that a gradual hyperextension of the spine was the treatment of choice for a compressed fracture of the body of a vertebra. In recent years, it has been shown that the best results follow when the compression is immediately reduced by hyperextension and the trunk immobilized in plaster in the hyperextended position. Gradual hyperextension of the spine very often is accompanied with pain, nausea, vomiting and distention. The immediate reduction of the compression relieves the pain in twenty-four to forty-eight hours, and the abdominal symptoms are reduced to a minimum. With the patient supine, hyperextension can be obtained by the use of an automobile jack⁽¹⁷⁾; or with the patient prone, a fracture table may be used or the patient may be suspended between two tables. In each instance the spine is immobilized in plaster in this position.

Hudson⁽¹⁸⁾ has recently reported a series of 113 cases treated with this method with good results in all cases.

I believe that after reduction and plaster immobilization in hyperextension, the patient should be kept flat on his back in bed with a board between the mattress and springs, or on a fracture bed for a period of from ten to twelve weeks. If the patient is allowed to sit or stand too soon, regardless of the caution used in applying the plaster in hyperextension, the cast will fail to continue to hold the spine in the proper position for the best result.

Fractures of the Os Calcis

This is still one of the unsolved fracture problems. Attempts to reconstruct the shape and contour of the bone after fracture have never been entirely satisfactory. Recently Gallie, of Toronto, reported excellent end results with immediate posterior subastragalar arthrodesis. An incision is made to one side of the Achilles tendon, and the cartilaginous surfaces of the posterior portion of this joint are removed. The loss of normal subastragalar motion following a fracture of the os calcis is to be regretted, but it is necessary to relieve the pain which so often follows.

17. Bernstein, S. A.: Reduction of Compression Fractures of the Spine by Use of the Ryerson Modified Automobile Jack. *Bull. Hosp. for Joint Dis.* 2:133-140 (July) 1941.
18. Hudson, O. C.: Compression Fractures of the Bodies of the Dorsal and Lumbar Vertebrae. *M. Times, New York* 65:15-21 (Jan.) 1940.

Summary

I hope that in these remarks on fractures I have presented a few practical thoughts on some of the simpler methods of fracture care that will be of service to those of you who treat fractures, and have outlined some of the pitfalls and "do-nots" of the difficult case. The general practitioner should equip himself with a thorough knowledge of the principles of fracture therapy, apply these as best he can with what equipment he has at hand, and if in doubt, always seek consultation with the more qualified surgeon. Open reductions are seldom indicated if proper thought and care are given to the method of closed reduction and immobilization. It should be remembered that it is the functional and not the anatomic result which is the more important.

THE DIAGNOSIS OF OBSCURE FEVER

GEORGE T. HARRELL, M. D.

WINSTON-SALEM

Obscure fever presents an inspiring challenge to the imagination, ingenuity, and persistence of the physician. The fever may be high or low in degree, of short or long duration; it may be steady, spiking, remittent, or undulating in type. The National Tuberculosis Association has suggested that anything above 37.6 C. (99 4/5 F.) mouth temperature be considered fever. In several reported series three-fourths of the patients with obscure fever were females. In one of the series 36 out of 57 cases were never diagnosed. If the diagnosis is ever made, it is usually by the help of the laboratory. Laboratory data are helpful in establishing a diagnosis only if the findings are positive; negative findings should not be accepted as ruling out disease. To evaluate properly laboratory findings, one should be familiar with the variation found in normal individuals under the influence of fever. During fever, agglutination titers of sera against many organisms rise; only that one

which shows a steady, progressive increase to a reasonably high figure is significant.

The physician should always take upon himself the responsibility of looking at definitive laboratory tests on which the diagnosis may rest. He has spent four years in medical school, plus additional years in hospital training, to acquire his knowledge, and he should not expect a hospital laboratory technician or an office girl, who has had from a few weeks to a year of training, to be able to recognize easily the gametocytes of estivo-autumnal malaria, the organism of *Brucella* when freshly isolated, or the rare blast cells in an early leukemia.

Infections

Septicemia: In the presence of fever one naturally searches first for infection. If no localized site can be found, the possibility of septicemia should be considered, especially if joint pains, chills, and rash are present. A history of rheumatic fever or other possible cause of damage to the heart, the presence of a congenital heart lesion, an arteriovenous fistula, or a patent ductus arteriosus makes bacterial endocarditis a strong possibility. Repeated blood cultures by any ordinary technique usually suffice to isolate the common cocci or members of the colon group. Many bacteria, however, are fastidious in their cultural requirements. Anaerobic streptococci, which may gain entry from the intestinal tract, may not grow out unless the blood is planted in a deep vaseline-sealed tube or over a spray dish containing pyrogallic acid and sodium hydroxide. Some strains of *Brucella* and *Neisseria* prefer an atmosphere containing a 10 per cent concentration of carbon dioxide. It is wise to plant blood cultures in both solid media and broth. *Brucella*, when freshly isolated in broth, may cloud the media imperceptibly; staining the sediment after centrifugation of 10 to 15 cc. will show faint coccoid forms which to an unaccustomed eye will appear as dust or precipitated stain. After several transplants the familiar gram negative bacilli are readily recognized. Atypical strains of *Eberthella typhosa* are found in this part of the country which may not give typical fermentation or agglutination reactions. *Hemophilus influenzae* often is difficult to grow, and *Pasteurella tularensis* requires cysteine in the media.

Syphilis in the secondary stage is a true

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septicemia which may give fever; the Wassermann or similar test is always positive. Malaria is a septicemia, although the organism responsible is higher in the scale than the bacteria. The parasites, when present in small numbers, may be found more readily sometimes by examination of an unstained fresh blood smear with dark field illumination. The brilliant dancing chromatin, usually in violent motion inside the faint rim of an erythrocyte, is more easily seen as a bright spot on a dark background than as a stained, motionless particle on the brightly lighted background of a fixed smear.

Generalized Infection: Generalized infections in which organisms are not readily recoverable include those caused by the Rickettsia—parasites which are midway in size between the ordinary bacteria and the filtrable viruses, and which do not grow in the absence of living tissue cells. The organisms produce a thrombotic lesion in terminal arterioles which results in the hemorrhagic rash of typhus and Rocky Mountain spotted fever. Q fever is a disease formerly thought to occur only in Australia or in the western states but which recently has been described as a laboratory infection in the eastern states, and has occurred spontaneously in North Carolina. It usually is manifest as a pneumonia, from which none of the usual bacteria are recovered. Specific agglutination tests against this organism are done by the National Institute of Health. In the other rickettsial diseases non-specific tests such as the agglutination of X_2 and X_{19} strains of *Proteus vulgaris*—the Weil-Felix reaction—confirm the diagnosis.

Rheumatic fever is the most common generalized infection in which the causative agent cannot be demonstrated, for it has never been identified. In this part of the country the disease does not present the usual textbook picture, which describes patients seen in colder, damp climates. The joint pains may be mild and fleeting, or the symptoms may be confined to muscle as "growing pains." The tissue response, production of Aschoff bodies, results in the familiar nodules in connective tissue; demonstration of these by biopsy is the only absolute proof of the infection.

Localized Infection: Localized infections may be tucked away in obscure corners of the body where physical signs are difficult

to elicit. A small cortical abscess of the kidney may spread to the perinephritic space by direct extension and then heal so that the urine is negative on examination. In the early stages of the perinephritic abscess a mass may not be palpable, but plain x-ray films of the abdomen usually show obliteration of the kidney outline and the psoas shadow, with curvature of the spine toward the affected side. If intravenous pyelograms are made, one film should be taken in the lateral position; for the kidney may be displaced anteriorly but not laterally. Enlargement of the liver, without localized tenderness, but often with pain on fist percussion, may indicate abscess of the liver. In this part of the country asymptomatic amebic infestation occurs in about 15 per cent of the population. Many of these patients have a very vague or distant history of bloody diarrhea which may have been quite mild. Under the immunologic or mechanical changes incident to an intercurrent infection or an operation such as a herniorrhaphy, the disease may flare up as a minute local lesion, difficult to find even at autopsy. This may metastasize to the liver, usually as a solitary abscess. The dome of the diaphragm may be elevated or peaked. The intravenous injection of colloidal thorium dioxide will aid the surgeon in localizing the lesion before aspiration or drainage. The complement fixation test to prove the amebic etiology is dependable only in highly trained hands.

Pus may collect under the diaphragm over the dome of the liver following rupture of any abdominal viscus or from extension of a small subcapsular abscess of the liver metastasizing from an appendicitis. No physical signs may be present except elevation and fixation of the right diaphragm, although occasionally a transient rub may be heard. Abscesses in the left upper quadrant under the liver or around the spleen may give no physical signs and may be found only by abdominal exploration; no laboratory test is helpful.

Recurrent attacks of fever following minor upper respiratory infections may be caused by a small area of bronchiectasis. Repeated careful examinations of the lungs will disclose rales after expiratory cough. Morning sputum, increased in amount with colds or on postural drainage, or repeated episodes of localized pleural pain may excite suspicion. The plain x-ray film is usually

negative, but intratracheal instillation of iodized oil will reveal dilated bronchi.

A disease which appears to be more common in physicians, nurses and medical students and which is characterized by low-grade fever and lymph node enlargement is infectious mononucleosis or glandular fever. Occasionally individuals will have recurrent mild attacks over a period of months with bouts of low-grade fever, usually with enlargement of the cervical or other superficial nodes, but rarely with involvement only of the iliac or other intra-abdominal groups. The symptoms may even simulate mild appendicitis. The finding of abnormal lymphocytes or monocytes in the blood smear and the agglutination of normal sheep cells by the patient's serum—the Paul-Bonnell test—confirm the diagnosis.

The most common infection in which the disease may remain localized and the infecting agent hidden for a long time is tuberculosis. Enlargement of the mediastinal or abdominal lymph nodes without physical signs may persist for weeks. The diagnosis can be proved only by demonstration of the organisms; this requires patient, persistent search. Aspiration of the fasting stomach, with concentration of the contents and staining, or injection into a guinea pig, is more helpful than repeated examinations of single random specimens of sputum. The new fluorescent dye, auramine, used with ultraviolet light and yellow filters in the microscope to make the organism stand out brightly on a dark background, promises to increase the ease of finding the organisms. The tuberculin test offers only negative evidence if there is no reaction, and may be misleading; for in miliary spread the reaction may be negative in the anergic terminal phase. If the reaction is known to have been negative before the illness and it becomes positive, this may be considered strong circumstantial evidence of a tuberculous infection, especially in children; but nothing replaces the demonstration of the organisms. In cases of massive miliary spread to the lungs following rupture of a caseous node into the trachea or into the thoracic lymph duct, no x-ray or physical findings may be present for several weeks except a persistently elevated respiratory rate. Repeated x-ray films, which are more reliable than fluoroscopy, will eventually show the telltale millet-sized seeding of the lung fields.

The theory that persistent fever can come from foci of infection has been greatly overworked. It is true that transient bacteremia can be demonstrated in patients with pyorrhea after they have chewed paraffin, but this lasts only one to five minutes and gives no symptoms unless the organisms settle out in tissue with lowered local resistance and cause a specific localized infection such as a pyelonephritis.

Occasionally a patient with typical symptoms of neurocirculatory asthenia, who runs intermittent low-grade fever, will be found to be harboring *Brucella* in a gallbladder which is asymptomatic and which shows only slightly impaired function by x-ray. Culture of aspirated contents of the fasting duodenum, after the administration of sterile magnesium sulfate through the tube, may reveal the organisms.

Metabolic Disorders

Rapidly developing fever with tachycardia in a patient who has just undergone a minor operation may be the first sign of a "storm" in mild, previously unrecognized thyrotoxicosis. Careful examination of the preoperative chart will reveal a persistent but definite tachycardia. A very minor infection in a patient during an exacerbation of pernicious anemia may cause high fever out of all proportion to the severity of the infection. Patients with recurrent migratory venous thromboses may run fever even though no new lesion or appreciable change in the old thrombophlebitis is recognized. In recent years fever has been described as one of the toxic manifestations of various sulfonamide compounds. The onset occurs usually after seven to ten days of therapy; the patient does not look as ill as the chart would indicate, and very often there is a striking bradycardia. Withdrawal of the drug results in prompt remission of fever in twelve to thirty-six hours. A rare metabolic cause of fever occurs in congenital ichthyosis due to loss of the normal mechanism for dissipation of excess body heat by evaporation of perspiration.

Tumors

Fever with persistent generalized or local lymph node enlargement suggests the presence of one of the lymphoma group, which seem to show some characteristics of both new growth and infection. Although leu-

kemia can usually be diagnosed by the total and differential white blood cell counts, occasional cases with low or normal total count may persist for years with exacerbations and remissions of fever. Very careful examination of smears of the peripheral blood or of the sternal marrow after aspiration through a lumbar puncture needle inserted at the junction of the manubrium and body of the sternum will reveal abnormal leukocytes and make the diagnosis of aleukemic leukemia. Fever is present more often than not in Hodgkin's disease; if the swings present the rhythmic undulations of Pel-Ebstein fever, very careful search for a palpable node should be made. Occasionally none will be found; for the disease may start as the pure abdominal form, or more rarely in bone, usually the flat bones of the pelvis or vertebra. Lymphosarcoma can be proved only by biopsy. Removal of a peripheral lymph node is a relatively painless and simple procedure and may give the answer to a puzzling clinical case in several days and save the patient arduous and expensive diagnostic procedures.

Generalized carcinomatosis with widespread metastases from malignancy in the breast, bronchus, or kidney may cause fever. The French compare the process to infection and call it *septicémie cellulaire*. Fever may be caused by a tumor such as a hypernephroma in the absence of demonstrable metastasis and may subside after surgical removal of the tumor until recurrences appear. Metastases to the liver especially may cause fever; it is not known whether this is due to some breakdown product of the cancer cells, necrosis of the invaded tissue, or simultaneous unrecognized infection.

Trial of Drugs

In the absence of any demonstrable cause for fever, a therapeutic trial of various specific drugs is justifiable, but a favorable response is not proof of the etiology. Most infections that respond to quinine are probably due to malaria, but this drug is a protoplasmic poison and some clinical evidence has recently been offered that it is effective against one of the *Rickettsia*. Salicylates are antipyretic in most infections but none responds so dramatically or recurs so promptly on withdrawal as acute rheumatic fever. Rarely this disease will respond to neocinchophen when salicylates are ineffect-

ive. Emetine is specific for amebic infections and its use for ten to fourteen days is probably justified if liver abscess is suspected. Fever occasionally occurs in tertiary as well as in secondary syphilis, but in either case it responds in several days to treatment with arsenic and bismuth. In tertiary syphilis it is customary to give iodides concurrently, but this is dangerous unless the tuberculin test is negative. Tuberculosis can occur in patients with positive serology, and the administration of iodides will dissolve a granuloma due to tuberculosis as well as one due to syphilis and increase the fever by liberation of tuberculo-protein. Neoarsphenamine is effective in Vincent's infection and in some urinary infections as well as in syphilis; a small dose (0.3 to 0.45 Gm.), repeated in five days if necessary, may clear up infectious mononucleosis. The sulfonamides are effective against such a variety of organisms that no conclusion may be drawn from a response to their use.

Summary

There is no substitute for a detailed meticulous history in cases of obscure fever. Every lead should be explored to the limit and the story should be gone over again and again to obtain points previously missed. When a diagnosis may be made, the disease is usually tuberculosis, rheumatic fever, or malignancy. All obscure cases should be followed to autopsy so that additional light may be shed on the interpretation of symptoms, signs and laboratory data.

SCURVY IN CHILDREN

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Although scurvy is an easily preventable and curable disease, 15 cases were seen in children under 12 years of age at Duke Hospital from 1930 to 1941. In certain low income groups 61 per cent of the children have diets so deficient that their vitamin C blood level is less than one half of the normal value (0.8 mg. per 100 cc.) and 27 per cent of these children have no detectable ascorbic acid in their blood⁽¹⁾.

From the Department of Pediatrics of the Duke University School of Medicine, Durham, N. C.
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1. Milam, D. F., and Wilkins, Walter: Plasma Vitamin C Levels in a Group of Children Before and After Dietetic Adjustment, *Am. J. Trop. Med.* 21:489 (May) 1941.

TABLE 1.

Case number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Sex	F	F	F	M	F	M	F	M	F	M	F	F	F	M	M	6 M; 9 F
Age in months:																
0-8		X										X		X		3
9-18	X		X		X	X	X		X	X	X		X		X	10
19-27				X				X								2
28-144																0
Race	W	W	W	W	N	W	N	W	W	N	W	W	N	W	W	4 N; 11 W
Premature births					X							X		X		3
History of infection					X	X			X	X	X	X	X	X		8
History of Vitamin C in the diet:																
None	X	X		X		X	X	X					X			7
Inadequate										X	X				X	3
Adequate			X		X				X			X		X		5
Symptoms and signs:																
Irritability	X	X	X	X	X			X	X			X	X		X	10
Weakness	X	X	X	X	X	X	X	X	X	X	X				X	12
Soreness	X	X	X	X	X	X	X	X	X		X	X	X		X	13
Diarrhea					X	X				X						3
Rosary		X	X			X	X	X	X		X				X	8
Bleeding gums			X		X		X	X	X	X	X					7
Temperatures on admission (C.)		34.0	37.8	37.5	40.0	37.8	40.8		38.0	39.0	37.1	37.2	38.1		38.2	
Laboratory findings:																
R. B. C. in urine		X		X					X		X	X				5
Benzidine reaction in stool		X				X				X		X		X		5
Hemoglobin (per cent)	93	80			36	60	42	67	65	58	74	55	83		70	*65
Millions of R. B. C.	3.91	3.54			3.2	3.05	2.52		3.09	3.25	3.73	2.48	5.8		5.5	
Color index	1.19	1.13			.77	.98	.83		1.05	1.12	.99	1.10	.71		.64	*.91
Ascorbic acid in plasma					Low			0	0			0.1 mg. %			0	
X-ray changes of scurvy	X	X			X	X	X	X							X	6
Changes of scurvy and rickets			X			X					X	X	X	X		6
No x-ray changes				X				X		X						3
Therapy:																
Mg. of ascorbic acid		300	50		500	150		150	100	50	300		400	150	200	
Ounces of orange juice	2			4				3				1	1/2			
Results:																
Immediate cure	X	X	X	X	X		X	X	X	X	X	X		X	X	13
Deaths						X							X			2

* Mean value.

Age and Sex

There were 6 boys and 9 girls in this group. Three children were under 9 months of age, 2 were between 18 and 27 months and the remaining 10, or 67 per cent, were between 9 and 18 months of age (table 1). This disease almost never develops in children under 4 months of age regardless of diet, but cases of congenital scurvy do occur rarely. The predominance of scurvy in this age group (9 to 18 months)⁽³⁾ probably depends on two factors: (1) Growth is very rapid and there is probably an increased need for vitamin C, and (2) several months are required for an infant born with a normal store of vitamin C to develop scurvy. It has been shown that it takes five or six

months for an adult to develop clinical scurvy on a very deficient diet⁽⁴⁾.

Predisposing Factors

Certain factors have been said to predispose to scurvy. Negro children may be less likely to exhibit clinical scurvy than white children^(3a). There were 11 white and 4 Negro children in this series, and about twice as many white as colored patients are seen in our clinic. This fact probably explains the predominance of white patients with scurvy here.

Scurvy probably occurs more frequently in premature than in full term babies^(3a, 5) owing to the excessive demands for vitamin C caused by rapid growth, and to altered metabolism or impaired absorption from the

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intestinal tract. Although the usual premature infant has a normal store of vitamin C in the liver⁽⁶⁾, the administration of larger amounts of vitamin C are required at an earlier age (case 14), and unless the intake of vitamin C is adequate the premature baby develops abnormalities of protein metabolism⁽⁷⁾. Three infants in this series weighed 2,500 Gm. (5½ pounds) or less at birth. The diets of these premature infants were not strikingly different from those of other infants.

Infection is one of the most important factors related to the development of vitamin C deficiency^(3a,8). Eight patients, or 47 per cent of this series, had definite infections either shortly prior to or on admission. A vitamin C deficiency occurs in many febrile infectious diseases^(8c,9). Fever alone causes a decrease in the tissue vitamin C content of guinea pigs⁽¹⁰⁾. Whether ascorbic acid deficiency predisposes to infection^(9b,11) or infection predisposes to vitamin C deficiency^(8c,f) is not known. Prolonged diarrhea also may be a factor in producing vitamin C deficiency^(3a): (1) because it is frequently the result of an infection, and (2) because it interferes with the absorption of vitamin C

from the intestinal tract⁽¹²⁾. Three of our patients had diarrhea during their present illness.

Diet

The dietary histories obtained from the mothers of our patients were surprisingly variable. Seven of our 15 patients had no fruit juice or ascorbic acid in their diets. The late development of scurvy in infants who were not given fruit juice may be due to the congenital storage of vitamin C and to the presence of small amounts of ascorbic acid in their food^(7c). Potatoes⁽¹³⁾, fresh raw cow's milk⁽¹⁴⁾, and even to a slight extent pasteurized cow's milk^(14b,15) have some anti-scorbutic properties. Dried or canned milk does not prevent scurvy⁽¹⁶⁾.

Many mothers state that their children receive plenty of orange or tomato juice. However, some of them merely offer the juice to the children, thinking that if they need it they will drink it. Others force the juice down their children and it is then vomited, mopped up and forgotten. Still others give their children inferior preparations such as juice from home-canned tomatoes (case 15), or juice that has aged or has been boiled and the vitamin C thus destroyed.

Rarely some infants develop scurvy even when there is every reason to believe that they are receiving an ample intake of ascorbic acid. There is a report in the literature of one child who, although he had an

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apparently adequate vitamin C intake, developed scurvy and did not respond until intravenous ascorbic acid was administered⁽¹⁷⁾. One child (case 14) developed scurvy in Duke Hospital while taking 25 mg. of ascorbic acid daily. This child was a premature infant who also had an infection.

None of the infants who developed scurvy were breast fed⁽¹⁸⁾. Breast milk contains about 4 mg. of ascorbic acid per 100 cc.^(14d, 19). Scurvy has been reported in three breast fed infants, but these were all less than 1½ months of age⁽²⁰⁾; their mothers' diets and consequently the breast milk probably were deficient in ascorbic acid.

Symptoms

The most common symptoms are irritability, and weakness or soreness of the lower extremities with resultant inability to stand or walk^(3, 22). Ten of our patients had been noticeably irritable and fretful. Thirteen patients had soreness and 12 had weakness of the lower extremities. Only one patient had neither weakness or soreness. Some scorbutic patients also have bleeding from the gums, bowels or urinary tract, fever, anorexia, or some accompanying disease.

The symptoms in the lower extremities lead to many mistaken diagnoses—for example, meningitis, sprain, fracture, dislocation, arthritis, and poliomyelitis.

Physical Findings

Characteristically the child lies quietly in bed with his thighs and knees flexed and abducted. He cries when he is touched or jarred. Beading at the costochondral junction, which has been said to be most marked on the fifth, sixth, and seventh ribs⁽¹⁾, was present in 7 of our patients. Beading is not an early sign of scurvy, as quite extensive

bone changes must take place before the rosary appears⁽¹⁾. An equal number of patients had bleeding gums^(3b, 13a), and 4 patients had both bleeding gums and a rosary. Capillary fragility tests were not done on enough patients to be included in this series^(13a, 23). Seven babies in this series had temperatures of 38 C. (100.4 F.) or above. Five of these children had infections, but it has long been observed that fever may or may not be present in scurvy^(3b) even when there is no infection. Scorbutic children do not necessarily appear emaciated or undernourished. Seven of our 15 patients looked well developed and well nourished.

Laboratory Findings

Microscopic hematuria was found in 5 patients⁽²⁴⁾. No grossly bloody or tarry stools were seen, but the benzidine test was positive in 5 patients. Two children had blood in both urine and stool. Twelve patients had both hemoglobin and red blood cell determinations done. The mean hemoglobin was 60 per cent, with extremes of 92 per cent and 36 per cent. The mean color index was .91. Many clinicians think that anemia is frequently a part of the clinical picture of scurvy^(3b, 8b, 25), but others say that a pure vitamin C deficiency need not produce anemia if an adequate iron intake is maintained^(4a, 26). Anemia in scurvy may result from blood loss due to hemorrhage⁽²⁶⁾, interference with the maturation of the red blood cells^(25b, c, 27), an iron deficiency⁽²⁸⁾, or a combination of these factors^(25b, c, 28b).

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Five children had plasma ascorbic acid determinations⁽²⁹⁾; four of them had no plasma ascorbic acid and the fifth had only a trace. This test is a valuable diagnostic aid^(23b), but a zero ascorbic acid level in the blood does not mean that the patient has clinical scurvy⁽²¹⁾. Of 59 children with no detectable plasma ascorbic acid, only 6 had clinical scurvy⁽¹⁾. Saturation tests are helpful in detecting sub-clinical scurvy. These consist in giving patients a test dose of vitamin C and determining the concentration in the blood plasma^(23b) or urine^(14d,30) at intervals.

X-Ray Examination

Twelve of our 15 patients had positive evidence of scurvy by x-ray⁽³¹⁾, and 3 had none. Scurvy usually causes characteristic x-ray changes^(3a,22,24,32), but a negative x-ray picture does not rule out the possibility of scurvy. Frequently changes due to rickets

are also found on the x-ray film, and 6 cases of co-existent rickets occurred in this series.

Prevention and Therapy

The National Nutrition Conference in May, 1941, made the following recommendations for daily requirements:

Age in years:	0-1	1-3	4-6	7-9	10-12
Mg. of ascorbic acid:	30	35	50	60	75

Growth, infection, fever, and certain drugs such as barbiturates and salicylates increase the demands for vitamin C^(19b,30c). Larger amounts are needed for the treatment of scurvy⁽³³⁾. Our patients were given from 50 to 500 mg. of ascorbic acid or 3 to 6 ounces of orange juice a day⁽³⁴⁾. Ascorbic acid may be given intravenously⁽³⁵⁾, but this is usually unnecessary.

Therapeutic Response

Two patients died; case 6 was a moribund microcephalic and died the day she entered the hospital, and case 13 had pneumonia and a transfusion reaction in addition to scurvy. The remaining 13 patients made immediate and complete recoveries. If the patient does not show marked symptomatic improvement in one week of active therapy, either an insufficient amount of vitamin C is being absorbed or the diagnosis of scurvy may be regarded with suspicion.

Summary

1. Although scurvy is easily preventable and curable, it is not a rare disease.
2. Most cases occur between 6 and 18 months of age.
3. Prematurity and infection are two important factors predisposing to scurvy; hence large amounts of vitamin C should be administered in these conditions.
4. A history of adequate vitamin C intake does not rule out the possibility of scurvy.
5. Infants seldom develop scurvy while being breast fed.
6. The most frequent symptoms are soreness or weakness of the lower extremities and irritability.

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31. X-ray criteria for the diagnosis of scurvy:

1. A finely irregular, broadened, intensely calcified zone of preparatory calcification at the epiphyseal end of long bones, the so-called "white line" of Fraenkel.
 2. A small spur at the lateral edge of the epiphysis.
 3. A zone of rarefaction immediately back of the zone of preparatory calcification.
 4. A broad, finely irregular edge of dense shadow encircling the nucleus of ossification at the epiphysis, together with rarefaction of the central portion, "Wimberger's sign".
 5. Separation of the epiphysis.
 6. A ground-glass transparency of the shaft, with clouding or obliteration of the trabecular structure which is visible in normal bone.
 7. A thinning of the cortical shadow, often represented merely by a narrow white line.
 8. Subperiosteal hemorrhage and evidence of hemorrhage into the soft parts.
 9. Subperiosteal fractures in the ends of the diaphysis.
 10. Enlargement and angulation of the costochondral and of the vertebral junctions of the ribs⁽²²⁾.
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7. Hemorrhagic tendencies and anemia are frequently present.

8. A negative x-ray picture does not rule out scurvy.

9. The symptomatic response to therapy should be rapid and marked.

10. In order to prevent scurvy both children and pregnant women should have an adequate intake of vitamin C.

TOXOPLASMOSIS — A BRIEF REVIEW

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WINSTON-SALEM

Newly recognized diseases are often described as being rare and unusual. The present review arises because it is the opinion of those who have contributed to our knowledge of toxoplasmosis that the condition occurs widely and is not uncommon. Unrecognized cases must be present in North Carolina.

Toxoplasmosis is an acute or subacute generalized disease caused by protozoa and presenting clinically a bizarre picture — malaise, fever, usually signs of central nervous system stimulation, and in some cases skin lesions and respiratory distress. There have been only 10 cases reported in the literature up to the present time. All but one of the cases terminated fatally.

The *Toxoplasma* parasite was first found in a North African rodent in 1908. Within the next few years the organism was isolated from a wide variety of animals. Mice, rats, guinea pigs, rabbits, chickens, pigeons, squirrels, cats, dogs, and monkeys are known to harbor these organisms. In 1914, the first case of suspected toxoplasmosis in a human being was reported in a 14 year old boy in Ceylon. The lad exhibited fever, severe anemia, and splenomegaly. Smears from the blood and the spleen revealed parasites morphologically resembling *Toxoplasma*. Other isolated cases were reported in which the organisms appeared similar to *Toxoplasma*, but these cases have been considered controversial. Several occurred in infants within two to three days after birth and were characterized clinically by convulsions and an acute course with a fatal termination.

In 1937, Sabin first isolated the *Toxoplasma* in North America in a guinea pig. In the

same year, Wolf and Cowen⁽²⁾ reported a case of an infant dying of convulsions at twenty-nine days of age. Careful study of the material revealed organisms which were first identified as *Encephalitozoa*, but were later recognized as *Toxoplasma*. Similar organisms were found in a case reported by Richter⁽¹⁾ as "meningo-encephalitis neonatorum". In 1939, Wolf and Cowen⁽²⁾ definitely proved the presence of protozoa in another case of congenital encephalitis.

The first case of toxoplasmosis occurring in an adult was reported in 1940⁽³⁾. The patient was a 22-year-old Peruvian who had fever and malaise, and died in one week's time. Sections of the tissue removed at postmortem examination revealed many parasites in the central nervous system, liver, heart, spleen, lymph nodes, and bone marrow.

In March, 1941, 4 cases were reported. Sabin⁽⁴⁾ reported 2 cases occurring in boys aged 6 and 8 years. Both exhibited fever and generalized convulsions with no signs of meningeal irritation or involvement of the cranial nerves. Moderate leukocytosis with increase in polymorphonuclear leukocytes was noted in the examination of the blood. The spinal fluid examination revealed an increased number of cells, all of which were lymphocytes or monocytes. Spinal fluid sugar, chloride, and protein levels were within normal limits. Cultures of the spinal fluid were reported as negative. The 6 year old boy, who was a native of Cincinnati, Ohio, died on the twenty-third day of illness. The 8 year old boy, who was the son of a West Virginia physician, recovered completely ten days following onset of the disease. Diagnosis in this case was made by inoculation of spinal fluid intraperitoneally in guinea pigs and recovery of the *Toxoplasma*.

The other 2 cases occurred in middle-aged adults in Saint Louis⁽⁵⁾. They complained of the sudden onset of lethargy, fever, malaise, and non-productive cough, and a generalized maculo-papular rash simulating spotted fever but not involving the palms of the

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hands or the soles of the feet. Both died twelve days following the onset of illness with marked degrees of cyanosis. Post-mortem sections and animal inoculations revealed large numbers of *Toxoplasma*.

The Organism

The *Toxoplasma* is a protozoan organism belonging to the group of Sporozoa. The organism is about 2 to 3 microns in size. It may be pyriform, crescentic, rounded, or spherical, depending on the method of isolation⁽¹⁾. It may occur singly or in groups, intracellularly or extracellularly. Differentiation from other members of the group, such as *Sarcocystis* and *Encephalitozoa*, may be made on morphological grounds and by consideration of the sites of occurrence and results of animal inoculation. Growth on bacteriological media has been unsuccessful. The organisms will grow on developing chick embryo.

Mode of Spread

In considering the points of entrance of the organism into the body, one must consider the infantile and adult forms separately. In experiments on animals the organisms have been found in the oviducts, uterus, and vagina of infected females⁽²⁾. This finding suggests that the infection may occur *in utero* either before or after placentation or in the passage of the infant through the birth canal. Unfortunately, the mothers of the human victims have not been studied for evidence of the disease.

The adult form may possibly be spread by means of animal vectors or from person to person. By analogy with other protozoan infections, the possibility of the mosquito as carrier has been suggested. In two of the cases reported there was a history of removing wood ticks the week before the onset of illness. The finding of the organisms in secretions from the bronchial tree suggests the possibility of spread of the infection by the droplet route⁽³⁾. The exact mode of spread is yet to be determined.

Pathology

The central nervous system, lungs, skin, spleen, heart, liver, lymph nodes, and bone marrow have been described as showing pathological change in toxoplasmosis. At

postmortem examination there may be no lesions noted at all in some of the cases, but in others hemorrhages, small miliary, grayish, tubercle-like lesions, or nodular lesions similar to small infarcts have been described. Microscopically, the lesions are described as necrotic granulomas showing lymphocytic infiltration, with occasional macrophages containing the *Toxoplasma*. No definite part of any of the organs is characteristically involved⁽⁴⁾.

Methods of Diagnosis

Because of the bizarre clinical picture offered by the few cases described, one must make a diagnosis by isolating the organism. This may be done by a number of procedures:

1. *Animal inoculation.*

The guinea pig is the animal of choice, although mice may be used successfully. It is important to be sure that the animals used come from a stock which is free from *Toxoplasma* infestation. The routes of inoculation may be intravenous, intracerebral, subcutaneous, or intraperitoneal⁽⁵⁾.

2. *Smears.*

Toxoplasma may be found in the sputum by an experienced observer in cases of pulmonary involvement. Smears of blood revealed the organisms in one of the controversial cases, but are only of theoretical value.

3. *Skin biopsy.*

In one case⁽⁵⁾, the organisms were found on biopsy of the skin lesions.

4. *Inoculation of suspected material on developing chick embryo*⁽³⁾.

Immunologic tests are being developed which may be useful in diagnosing the condition⁽⁶⁾.

Treatment

For the present, treatment is symptomatic. Many potent chemotherapeutic agents useful in other protozoan infections have been used without success. It is interesting to note that certain of the laboratory animals recovering from the infection show a high degree of immunity which apparently is lasting.

The first method of protecting hospital personnel against tuberculosis is a recognition of all tuberculosis in the patient population. W. H. Oatway, Jr., M.D. Hospitals, Aug., 1941.

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PROLONGED LABOR: ITS ETIOLOGY AND MANAGEMENT

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CONCORD AND KANNAPOLIS

Most authorities state that the average length of normal labor in a primipara is eighteen hours, and in a multipara twelve hours. Many labors considered normal are longer than this, and many are shorter. It is not possible to judge when a labor is abnormally prolonged on a time basis alone. After a number of hours of atypical uterine contractions, examination may show no change whatsoever in the cervix or the presenting part, and the physician is forced to the conclusion that the patient is not in true labor. These pains of so-called "false labor" may increase in intensity and regularity and progress into true labor pains. Owing to the effect of opiates and drugs given for analgesia, the total time between the beginning of labor and its termination is not necessarily the actual time of labor. However, for purposes of discussion, I have chosen an arbitrary time limit and considered as prolonged all labors of thirty hours or more.

The Cabarrus County Hospital is a small, general, Duke endowed hospital of one hundred and thirty beds and twenty bassinets. Since the hospital was opened in July, 1937, until May 1, 1941, there have been 1,481 deliveries. In 58 of these cases the length of labor was thirty hours or more. This gives the incidence of prolonged labor in this group as approximately 4 per cent. During a somewhat shorter period of time, in 4,341 patients delivered in Bellevue Hospital, New York City, there were 136 cases of labor lasting thirty hours or longer—an incidence of 3.2 per cent. Of course, no statistical conclusions can be drawn from the small group of cases reported here, but they will serve as a basis for discussion.

A complete discussion of the causes and management of prolonged labor would include nearly the entire field of abnormal obstetrics, and limits of time will permit us only to touch briefly on some of the phases of this subject. We are dealing with that small group of obstetrical cases in which the patient's chances for a successful vaginal delivery must be tested by a trial of labor.

The management of this group is a most difficult and trying problem.

Of the 58 cases presented here, there were only two in which labor exceeded fifty hours. In some cases labor is prolonged to eighty and ninety hours. Eleven cases occurred in multiparas, while 47 cases occurred in primiparas. Age did not appear to be an influencing factor. There were only three spontaneous deliveries in this group, but this small number is probably due to my practice of using low forceps and performing an episiotomy routinely on most cases. If we exclude low forceps, all the forms of artificial interference were used only with strict indications. In the majority of these cases spontaneous delivery cannot be expected, and some operative procedure is necessary. An evaluation of all the factors involved in the dystocia of a given case and the choice of the most suitable form of artificial interference is the problem presented to us.

Dystocia may arise from anomalies of the uterine contractile forces, developmental anomalies, gynecological abnormalities, contractions or abnormalities of the bony pelvis, faulty presentation of the fetus, or malformations of the fetus. For purposes of study, these 58 cases were divided into four groups, according to what was thought to be the primary or most important cause of prolonged labor: 24 cases were due to uterine inertia; in 21 cases faulty presentations or positions were thought to be the primary cause; in 9 cases a fetal complication was the cause; and only one case of a gynecological abnormality was found, this being due to a previous amputation of the cervix. It must be remembered that most cases complicated by gynecological abnormalities and contracted pelvis, and likewise many in which there are fetal complications, are recognized and terminated before the duration of labor assumes importance. In only a very few cases could any of these factors be considered alone. In nearly every case one factor depended in some degree upon the others. In almost all the patients with uterine inertia there were contributory causes such as posterior positions, breech presentations, and rigid cervixes. In all patients the pelvis were thought to be ample, but there was doubt about several. Many of the cases with abnormal presentations and positions were complicated by inertia, and it must be recognized that faulty position in

itself depends upon pelvic asymmetry or disproportion. Posterior position, rigid cervix, and poor contractions are a triad, usually not separated. It is significant that in all of the 9 cases in which labor was artificially terminated because of cephalo-pelvic disproportion, there was a faulty position of the fetus—usually a high unengaged head in the posterior position—and uterine inertia. Cases of prolonged labor usually present a very complex problem, and to unravel it requires the best of obstetrical judgment.

Uterine Inertia

Uterine inertia is the term used to describe weak and infrequent uterine contractions occurring in an otherwise normal case. There is no practical importance in differentiating between primary and secondary uterine inertia. Inertia in the first stage will cause prolongation of this period, often with failure of the cervix to dilate beyond a certain degree; in the second stage, delay and difficulty in the expulsion of the fetus may necessitate the use of forceps; and in the third stage, atony may produce hemorrhage. We have no practical method to measure accurately the power developed by uterine contractions. The diagnosis of inertia is based upon the clinical impressions gained from observing the patient in labor: the frequency and duration of the contractions and the firmness of the uterus during pains. The character of the contractions may have little relation to the subjective reaction of the patient.

The diagnostic ability of the physician is often severely taxed to determine the cause of the inefficiency. Among the etiological factors are such conditions as an infantile uterus; anemias and food deficiencies; overdistention of the uterus by polyhydramnios, causing a loss in tone of the uterine musculature; several pregnancies in rapid succession; too much sedation; and extreme nervousness. Some patients had suffered from a previous functional amenorrhea or metrorrhagia, suggesting an endocrine cause. Two patients were what might be called "pituitary types". Their appearance would lead one to suspect that contractions would be deficient. They were short, fat, heavy-featured women with masculine distribution of hair.

Faulty Presentations or Positions

In the majority of the 21 cases in which dystocia was the result of malpositions and

faulty presentations of normal infants there was probably some disproportion or maladjustment between the fetus and the pelvis of the mother, or some pelvic abnormality. Posterior positions frequently occur in anthropoid pelvis. In these patients the size of the baby did not appear to be an important factor in the position or presentation.

In 15 of these cases, the occiput was posterior. In only 3 cases of occiput posterior was the vertex engaged at the onset of labor. It has often been stated that in a primipara failure of the head to be engaged at or near term should lead one to believe that an actual bony disproportion exists, which may prevent delivery from below. However, with a posterior position it does not appear that a high, unengaged head at the onset of labor has any significance as regards ultimate delivery through the usual channel. In these cases the head, during labor, gradually entered into and was moulded through the pelvis to varying degrees either in the posterior position from the onset, or beginning in the transverse position and then turning posterior. In 3 patients the occiput was directly posterior. Posterior positions may occur in any type of pelvis. They are often found in anthropoid pelvis, where the head adapts itself to the most favorable diameter—namely, the anteroposterior. Most pelvis of this type are large, and labor and delivery are usually not difficult or prolonged.

There were 2 transverse presentations in this group. One was in a neglected case in which there was a prolapsed arm and a dead baby. All the fluid had drained away, a Bandl's contraction ring was present, and the uterus was tight about the fetus. Delivery was finally accomplished by version and breech extraction after the prolapsed arm was amputated at the shoulder. In the other transverse presentation, the cervix was dilated by means of a no. 4 Voorhees' bag, and a normal infant was successfully delivered by version and breech extraction.

There were 3 cases of frank breech presentation, and in these cases the dystocia was due to the fact that the legs and thighs splinted the body and prevented its adaptation to the birth canal. One compound presentation was formed of prolapsed arms in front of the breech. In each case, after the breech was "broken up" and the feet brought down, delivery was accomplished without un-

due difficulty. There was one face presentation with the chin directly posterior, in which a stillborn fetus was delivered by version and breech extraction.

Cephalo-Pelvic Disproportion

In 9 cases an actual cephalo-pelvic disproportion was thought to be the major cause of dystocia. In all of these cases there was an abnormal position of the head, and in a few uterine inertia was a definite factor. In 2 of these cases the pelvis was examined by x-ray, while in the others we could be fairly sure of the type by clinical examination. The measurements were within normal limits, but the pelvic architecture was of the android type. This is the most treacherous type of bony pelvis which we have to deal with. It is characterized by a flattened posterior iliac portion, a forward sacrum, converging side walls, prominent spines, shortened sacro-spinous ligament, narrow arch, and straight pelvic rami; any combination of these characteristics, resulting in a gradual funneling of the pelvis, may cause a dystocia, often difficult to recognize until after a period of observation in labor, and sometimes until labor has been prolonged. Therefore, this is the type of pelvis we would expect to find in the group of cases considered here. Three of these patients were delivered by low flap cesarean section, one by version and breech extraction and craniotomy on the after-coming head, and the remainder by Barton or Kielland forceps.

In none of these cases was cervical dystocia the cause of prolonged labor. The so-called "rigid cervix" will soften and dilate with time. In cases in which cervical dystocia is suspected, the cervix will usually dilate after other factors of dystocia have been overcome. This may not be universally true. In one case of very difficult and prolonged labor in a primipara, after the incisions in the cervix were made, a very large baby was delivered with the greatest of ease. A rigid pelvic floor is so easily overcome by episiotomy that it should never be a cause of prolonged labor.

X-Ray Examination

X-ray examination of the pelvis by the technique of Caldwell and Molloy is an invaluable adjunct to a clinical examination. I would consider their work the most valuable contribution made to obstetrics in the

past few years. They do not attempt to give a prognosis in any case on x-ray findings alone. The chief contribution of x-ray in obstetrics has been to demonstrate different architectural types of pelvis. It has taught us to think in terms of architecture of the pelvis as a whole, rather than in terms of actual measurements. By using these stereoscopic x-rays and then following the case clinically, one may improve his clinical ability. By the precision stereoscope, the actual measurements of the pelvis can be exactly determined. Unfortunately, there is as yet no accurate method of measuring the diameters of the fetal head. Not many hospitals are fortunate enough to possess a precision stereoscope, but most of the smaller hospitals have adequate equipment to provide stereoscopic plates of a patient in labor, which reveal the relative size of the fetal head and the bony pelvis.

No matter how competently determined, estimation of the capacity of the pelvis itself is of significance only in relation to the size of the fetus and the efficiency of the labor forces. Even the knowledge of these does not quite tell the whole story concerning the chances for a successful delivery. There are other intangible factors over which we have little control. Among these imponderable factors are the degree of straightening out of the fetal axis, the fragility of fetal blood vessels and dural septa; the state of the mother's health and nutrition; and many others which influence the outcome of labor and determine the survival of the fetus.

Methods of Delivery

Decision as to the method of delivery in these cases cannot be made in advance. Only by observation during a trial period may any sound decision as to the termination of labor by artificial means be arrived at. The following rules for the general management of the patient before and during this trial period of observation may be given:

(1) The patient should have received preliminary prenatal care with control of weight gain, dietary regulation, sensible exercise, and an adequate supply of iron, vitamins, and calcium.

(2) Preliminary prognosis should be based on an adequate history and complete physical examination, including examination and measurements of the pelvis. External measurements are of practically no value.

(3) Maintain an adequate amount of fluids and nourishment during the trial period of labor. If the patient is unable to ingest plenty of fluids and easily digested foods by mouth, infusions of saline and glucose must be supplied. Many of these patients are vomiting, and parenteral administration of fluids should be given without hesitation.

(4) Guard against infection by limiting the number of examinations to a minimum. Rectal examinations predispose to infections fully as much as vaginal examinations.

(5) When vaginal examinations are done, an aseptic technique should be followed. The patient should be scrubbed and examined on the table in the delivery room, fully draped, and the examiner should exercise the same care that he would for a delivery, using sterile gloves after scrubbing.

(6) A sympathetic and wise physician may help prevent exhaustion by allaying anxiety, comforting the patient, and bolstering morale.

(7) Rest should be provided by drug sedation. When pains are frequent, painful and inefficient in primary inertia, the administration of morphine and other sedatives is often followed by efficient labor. Many labors are made shorter, and the patient's suffering is relieved, by the proper use of analgesics during labor. These may include barbiturates, opiates, hypnotics or anesthesia. In the beginning, when there are nagging pains and questionable labor in a nervous patient, light sedation is very desirable. Often, actual sleep should be induced. In one of our cases, the patient when first seen had been receiving pituitrin for uterine inertia in the first stage. There was a definite uterine dystocia due to contraction rings. Labor did not progress until the patient was given a general anesthetic, and complete relaxation and sleep were secured for several hours.

(8) Blood typing should be done and blood donors provided in advance as a protection against hemorrhagic risk. This should always be done when difficulty is expected. Typing as a regular prenatal routine is not so imperative if whole blood plasma is available. This may be given quickly to any patient while arrangements for a transfusion of whole blood are being made.

(9) Calcium should be given intravenously if a calcium deficiency is suspected.

(10) Vitamin K should be given in these cases.

(11) If the attending physician has not satisfied himself about the type of pelvis, or if the case is doubtful, stereoscopic x-rays should be taken during labor. No matter how much confidence we may have in our own clinical ability, it is a very comforting feeling to see stereoscopic plates showing no relative disproportion when a patient is in prolonged labor.

(12) The family must be dealt with, and the patient's mother usually causes more trouble than the husband. It should be impressed upon them that the actual length of labor means little if the general condition of the patient is good.

The mental attitude of the physician in charge is important. He must guard against the temptation to interfere in these cases before the conditions for such interference are fulfilled. He must realize that time is an ally. Delay more often works for the patient's interest than against it, and very often waiting longer and still longer will simplify the problem at hand. Remember that the seriousness of prolonged labor is determined by evidence of exhaustion rather than by the length of labor. The pulse is a better guide than the complaints of the patient. However, it is possible to procrastinate too long. One of the older writers has said: "Never let the sun set twice on a woman in labor." Williams stated that an adequate test of labor had not been given until the patient had had one or two hours of second stage pains with the membranes ruptured. These would seem to be extreme views. The attendant must carefully recheck from time to time all details—the physical examination, his previous prognosis, and the patient's condition—, and endeavor to analyze the causes of the delay and determine the probable method of delivery. Often if the membranes are still intact, he may decide to rupture them artificially. This is a valuable method of treatment, and is often followed by more efficient contractions, further descent of the head, and in posterior positions by a better adaptation of the head to the cervix. I would advise that this not be done until the cervix is dilated enough to admit three fingers and we have committed ourselves to delivery by the vaginal route.

Vaginal delivery in cases of prolonged labor is most often accomplished by forceps. If this method is selected, certain conditions

must be satisfied if possible. The cervix should be fully dilated and retracted completely around the head. The biparietal plane of the head should be past the inlet. Manual dilatation of the cervix should never be done. This does not mean that in some cases a remaining rigid cervical rim cannot be manually pushed or slipped over the head. Only rarely is incision of the cervix necessary. If it is done, three incisions should be made: one directly posterior at the six o'clock position and the other two laterally, roughly midway between the bladder and the uterine artery, at the ten and two o'clock positions. This is preferable to Dührssen's incisions or to a directly anterior incision. In most of these cases, the head will be moulded to such an extent that the caput or skull itself will be well down on the pelvic floor and the biparietal diameter not yet through the true conjugate. It is often said that high forceps should never be used. This rule does not always apply, however. One patient was delivered by high Kielland forceps, with the cervix not completely out of the way, and the result was as good as could be expected considering the type of case. In a case of locked twins, both in the vertex position, high Barton forceps were used successfully on the first baby, after the heads were dislodged. The choice of forceps depends somewhat on the type of pelvis. For example, in android, flat and gynecoid types of pelves it is preferable to deliver the head through the pelvis in the transverse position with Barton's forceps, because the posterior portion of the pelvis will be more fully utilized. In the anthropoid type of pelvis, with the head in the posterior position, it would be unphysiological to rotate it in the mid-pelvis. Here the head should be brought through in the posterior position or pushed up and rotated above the inlet, either procedure being best accomplished with Kielland's forceps. Version and breech extraction after an attempted forceps delivery on high heads, although it is fraught with many dangers, will often result in satisfactory delivery.

In some of these cases in which we commit ourselves to vaginal delivery, the baby will be lost. This is to be expected in a small proportion of cases. In the 58 cases reported here, there were seven stillbirths. However, of these seven stillborn babies, two were dead intra partum when the patient was admitted to the hospital, one died during labor

because of a massive aspiration of amniotic fluid in a case of premature separation of the placenta, one was an anencephalic monstrosity, and one was a macerated stillborn baby, death occurring antepartum because of toxemia of pregnancy. This leaves two babies that were lost during the process of delivery. There were no maternal deaths. There was a rather high morbidity rate, but in only one case was there a severe postpartum infection. This was a severe hemolytic streptococcus infection with positive cervical and blood cultures. This patient recovered after receiving large doses of sulfanilamide and numerous blood transfusions.

If the baby is already dead or is lost during attempted forceps delivery or version and breech extraction, craniotomy may be necessary. Two craniotomies were done in this series. One was done after version and attempted breech extraction and the other after both forceps delivery and breech extraction following version had been attempted. In these two cases it was thought that craniotomy was a conservative measure.

Another vaginal procedure used was the insertion of the Voorhees' bag. In one case in which there was a transverse presentation it was used to dilate the cervix, and the other case in which it was used was a placenta praevia. This procedure is not resorted to as often now as in previous years. A no. 4 bag is the only size that should be used, and when possible extraovular insertion without rupture of the membranes should always be done.

I hesitate to speak about posterior pituitary extract. In carefully selected cases, with great caution and in the proper dosage, it may be used rarely before the end of the second stage. However, its use has caused so much damage that we may make it a rule that pituitary extract should never be used until the baby is delivered.

The decision to perform cesarean section is made with reference to the duration of labor and the time of rupture of the membranes. Classical cesarean section is seldom advisable in these cases, although it was done in one instance in which there had been a previous amputation of the cervix. However, in this case membranes were intact after a labor of thirty-one and one-half hours.

Low cervical, or low flap cesarean section was resorted to in 6 cases. It is often stated

that this operation should be done preferably within twenty-four hours after the onset of labor and within six to eight hours after rupture of the membranes, and that it must not be depended upon to prevent infection. While this operation is transperitoneal, I feel that these time limits can be relaxed somewhat with comparatively little danger of infection. In all low flap cesarean section cases one penrose drain extending through the peritoneum to the space of Retzius should be inserted. This drain is usually removed on the third day. One patient delivered by low flap cesarean section developed an intrauterine infection and peritonitis, with profuse drainage. Cultures from the peritoneum and lochia showed staphylococcus aureus. This patient recovered nicely with sulfathiazole and blood transfusions.

If low flap cesarean section is considered too risky, we should resort to one of the types of extraperitoneal cesarean section. One Latzko operation was done in this group. I am not familiar with the other type of extraperitoneal section, perfected by Waters at the Margaret Hague Maternity Hospital, in which the supravescical approach is used. The published results are excellent, however. We may dispense with the older peritoneal exclusion operation.

It must be remembered that sometimes babies delivered apparently in good condition by the Latzko operation die suddenly on the third to the sixth day. Autopsy on these babies reveals a congenital lobular pneumonia resulting from aspiration of infected material during the long period following rupture of the membranes before delivery.

Finally, in the occasional case where the uterus is grossly infected or where vaginal delivery by craniotomy is not feasible, hysterectomy following section should be done by the Porro technique.

Conclusions

In North Carolina most obstetrical patients are delivered by the general practitioner, and the majority of these deliveries are done in the home. There is no objection to this practice. However, if labor is prolonged unduly, the patient should immediately be sent to the hospital. There, if the original attendant is not satisfied, he should request consultation with a man who has had some obstetrical training. It is up to

the obstetrician to solve the difficulty presented by these cases, and he should be able to perform the types of cesarean section mentioned as well as the different vaginal operations and procedures. Cooperation between the general practitioner and the competent obstetrical specialist should help reduce our present fetal and maternal mortality rates.

Abstract of Discussion

Dr. Frank Lock (Winston-Salem): We have at our command two primary prophylactic measures which we can carry out during the prenatal period. The first of these is control of the weight gain. The average gain is 20 pounds or less. There is no reason why the patient should gain more than 18 to 20 pounds. A patient obese at the beginning of her pregnancy can be managed so that she will lose weight during her prenatal period. The second measure is to get the patient to take adequate exercise. Most pregnant women who do their housework feel that this is all they can do and want to spend the rest of their time in bed. That is just what they should not do. If we can get them to take a brisk walk each day their muscles will be stronger and they will be in much better condition for the ordeal of labor.

There has been much in the literature about the rupture of membranes for bringing about more forcible uterine contractions, and as a result this practice has been abused. The use of sedation has also been abused. Intelligently used, it is of great aid in resting the patient and in reducing the morbidity of labor. But if it is used before uterine contractions are fully established it quite often will retard labor and depress the uterine pains. The use of sedation has also been shown to cause central nervous system degeneration as a result of fetal anoxemia. For that reason we should be more careful about giving sedation.

The common practice of evaluating the cervical condition on a basis of centimeters of dilatation leads to many technical errors in obstetrics. We should learn that the cervix is not fully dilated as long as any part of it can be felt on pelvic examination; we may save many babies by recognizing this simple fact.

Vitamin K has now been synthesized and is quite inexpensive, and there is no reason why any woman should not be able to take it during her pregnancy. It has been shown that the fetal prothrombin time is greatly reduced by the use of vitamin K. If vitamin K is given even one hour prior to the delivery of the baby the prothrombin time in that baby will be markedly reduced. Certainly in patients with dystocia we should give vitamin K to prevent bleeding, especially of the seeping type.

Dr. Monroe says that all low flap cesarean section cases should be drained. I presume he means in patients potentially contaminated. I do not entirely agree with that statement. However, I do think that we should use sulfanilamide powder in these potentially infected cases, because it has been shown very conclusively in the last few months that it is of great value.

Dr. I. M. Procter (Raleigh): There are only two points I want to make, and one of those Dr. Lock discussed. It is the question of dilatation of the cervix. To my mind the cervix is the most important part of the maternal anatomy. It is the part

that produces more difficulty, more danger, and more death, probably, than any other part. Contracted pelvis we recognize early, and we can take care of them by elective cesarean section. I believe we should study the cervix in every patient—its elasticity and its dilatability—and train our judgment as far as possible to decide whether that particular cervix will ever open in a satisfactory diameter. We can then elect other types of operation for those patients who show indications that the cervix will never open satisfactorily.

The other point I wish to make concerns the mechanism of labor. As the uterus contracts we might consider that the fetal head, sitting on the fetal spine, is a two-armed lever, the fulcrum of which is at the axis of the spine, and the anterior end of which is longer than the posterior end. When the uterus contracts the head is driven down, and the anterior and posterior ends of the head meet unequal resistance in the bony part of the pelvis and later in the levator ani muscle. The greater resistance is on the anterior part of the head, and that is held back; the posterior part of the head dips down into the pelvis. Lack of flexion is certainly a big obstacle in the management of such cases.

By studying the anatomy and physiology of labor and then comparing the normal and the abnormal and instituting logical treatment for the abnormal findings we shall improve our results.

Dr. Monroe: I agree with Dr. Lock as to the importance of keeping down the weight gain during pregnancy. That is one of the hardest things I have to do. Most patients do gain too much weight in pregnancy.

I think the solution of this problem lies with the general practitioner and with the physician who does a lot of obstetrics in the home. The worst cases that I have had were brought to the hospital late in labor. If they had been seen in the beginning the results would have been better. Any patient in labor for twenty-four or thirty hours should be taken to the hospital.

DUODENAL ULCER IN A NEWBORN INFANT

EDGAR V. BENBOW, M. D.

WINSTON-SALEM

A colored female infant, 17 days old, was admitted to the pediatric service of the Kate Bitting Reynolds Memorial Hospital. The baby had been vomiting since she began to nurse, and had lost weight.

The mother's Wassermann reaction was negative. The delivery had been a normal, easy one performed in the home. The baby's weight at birth was 8 pounds.

The vomiting had no constant relationship to feedings, was not projectile in type, and had not contained blood. The infant had been having stools, and no blood had been noticed in the stools.

The patient's weight upon admission was 7 pounds—1 pound less than her birth weight. She was somewhat dehydrated;

her eyes were slightly reddened and swollen, and there was a small amount of purulent discharge in the corners. Vaginal smears and smears from the eyes were negative for the gonococcus. There was no abdominal rigidity, and no abdominal mass could be detected. A few small peristaltic waves could be seen over the epigastrium after it was tapped gently with a wet cloth. Physical examination was otherwise entirely negative. The diagnosis of nonspecific conjunctivitis, pylorospasm or hypertrophic pyloric stenosis, and malnutrition with moderate dehydration was made.

A formula was prescribed, atropine was given, and saline was administered subcutaneously. Three days later 75 r units of x-ray were given over the pyloric area.

The baby's course was not satisfactory. She retained some of her feedings but vomited most of them. During the first four days in the hospital she lost an additional 15½ ounces—practically 2 pounds since birth. A Ramstedt pyloroplasty was thought advisable because of the symptoms and clinical course, although no mass could be palpated. The following morning the abdomen was opened. No definite thickening of the pylorus was found; no other lesion of the intestinal tract could be detected. Although the muscle was not thickened, a Ramstedt pyloroplasty was performed in the hope that it might relieve the pylorospasm, and the abdomen was closed.

Postoperatively the patient was put on a formula prescribed by the pediatrician. She received atropine and phenobarbital and several injections of mother's blood intramuscularly. The incision healed well in due time, but the baby did not improve. She had normal yellow stools and did not vomit any blood, but she gradually lost weight until one month after the operation she weighed less than 5 pounds and ¾ ounces, or 3 pounds less than the birth weight. At this time the patient suddenly vomited about 2 drachms of dark blood and died shortly afterwards, having lived thirty-five days after admission to the hospital, and thirty days after the operation.

A postmortem examination was done. No congenital abnormalities were present. The abdominal scar was well healed, and there was no obstruction at the pylorus and no thickening of the pyloric muscle, but 1 cm. beyond the pyloric ring on the posterior aspect of the duodenum a circular punched



Fig. 1. Duodenal ulcer in a month-old infant.

out ulcer 3 mm. in diameter was present. The margins of the ulcer were not thickened, and were sharp. A probe put into the ulcer showed through the entire wall of the duodenum except the serosal layer. The mucosa of the duodenum was hyperemic but smooth. The remainder of the intestine was empty but of normal diameter. The autopsy report was otherwise negative. The anatomical diagnosis was acute perforating duodenal ulcer, congestion of internal organs, emaciation and dehydration.

Discussion

The term "peptic ulcer of the newborn" includes those ulcers occurring from birth up to the age of 14 days. The condition is probably more common than is thought, as most cases are probably overlooked. There are on record in the literature 42 such cases, not including our own. Only 6 of these 42 patients were operated upon. Most of the remaining 36 ulcers were found upon post-mortem examination, and a few were demonstrated by x-ray. Of the 42 reported cases there were 18 which perforated, 22 which bled, 1 which was stenosing in character and 1 which was persistently painful.



Fig. 2. Enlarged photograph of a duodenal ulcer in a month-old infant.

Of the 6 patients on whom operations were performed, 5 were operated upon because of perforation, and 1 because of pyloric obstruction. I could not trace the outcome of the latter case, but 4 of the 5 patients operated upon for perforation died, giving a mortality of 80 per cent. The type of operation done was closure of the perforation.

The ratio of duodenal to gastric ulcer in the newborn is 2:1, and the ratio of occurrence in males and females is $1\frac{1}{2}$:1.

In 1923 Lee and Wells¹ reported a case of "Perforation in Utero of a Gastric Ulcer".

Ulcers of the newborn present certain outstanding characteristics. The great majority of those recognized bleed seriously or perforate, or do both. In many the onset is precipitous, without recognizable premonitory symptoms or signs. In only a few cases is there evidence of intracranial injury or of localized or generalized sepsis, either clinically or at autopsy. With few exceptions the lesions are acute, without cellular reaction or bacterial invasion. Because of the sudden, acute, fulminating symptoms, very few of these newborn patients have been operated upon.

1. Lee, W. E. and Wells, J. R., Perforation in Utero of a Gastric Ulcer, *Ann. Surg.* 75:36-41 (July) 1923.

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THE CHARLOTTE MEETING

The Eighty-Ninth Annual Session of the Medical Society of the State of North Carolina was held in Charlotte May 11-13. Considering the restrictions on tires and the number of members who are in the Army, the attendance was surprisingly good. Those who came were well repaid. The programs, both for the section meetings and for the General Sessions, were well arranged, and very informative. The revival of the banquet preceding the ball on the President's Night was a popular feature, and there were not enough tickets available to meet the demand.

The knowledge that our country is at war and that the medical profession is expected to play a large part in the present emergency was evident throughout the whole meeting. Virtually all of the First General Session on Tuesday was devoted to military medicine. President Webb Griffith's address dealt altogether with the present emergency, as did the addresses of Dr. Fred Rankin, President-Elect of the American Medical Association, and of General H. C. Coburn.

It was unanimously voted by the House

of Delegates to remit the annual dues of members in military or naval service for the duration of the war.

The Nominating Committee, according to unofficial reports, had a most harmonious meeting. Certainly their list of nominees was acceptable to the overwhelming majority of the members present. The new officers of the Society are: Donnell Cobb, President; James Vernon, President-Elect; George Coleman, First Vice President; and Julian Moore, Second Vice President.

Invitations for the 1943 meeting were received from Raleigh, Pinehurst, and Winston-Salem. Raleigh was recommended by the committee because it is centrally located and has good railroad facilities. At the final meeting of the House of Delegates, however, it was decided best to leave the time and place of the next meeting to the Executive Committee—inasmuch as no one can foretell what might happen between now and then.

A bit of human interest was added to Dr. Donnell Cobb's installation as President at the final General Session, when his father, Dr. W. H. Cobb, escorted him to the chair. In his brief but eloquent inaugural, the son recalled that his grandfather had been President of the Society in 1894 and his father Vice President in 1906.

Charlotte's hospitality left nothing to be desired. The Committee on Arrangements apparently thought of everything, and numerous favorable comments were heard. It is not likely that the Society will wait another twenty-odd years to go back to the Queen City.

EDITORIAL NEWS NOTES

Dr. Roscoe McMillan has proved himself an admirable secretary. No session of the society has ever been more smoothly run than was the meeting held in Charlotte last month. The new format of the program was a great improvement over its time-honored predecessors; the breakfast for the presidents and secretaries of the county societies was an excellent innovation; and the revival of the President's Night banquet was well received. During the year Dr. McMillan has managed to visit most if not all of the districts in the state, while meeting the exacting demands of a large practice.

The session was perhaps the soberest, both literally and figuratively, that has been held in years. Those present were keenly aware of the seriousness of the emergency we are facing, and this feeling was apparent throughout.

* * * *

Ben Royal, who has a hospital in Morehead City, remarked that he did not have to go to war; the war came to him. He has had more than 200 casualties to treat as the result of the submarine activity off the Atlantic Coast.

* * * *

The Auxiliary meetings were well attended. It is gratifying to note the increasing numbers of ladies who accompany their husbands to the annual meetings. Let us hope that the custom will continue. Attendance on the annual sessions helps the ladies to understand the problems of the profession.

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The attendance on the breakfast for the presidents and secretaries of the county societies at 7:30 Tuesday morning was gratifyingly large and was a tribute to Secretary Roscoe McMillan. A number of excellent talks were heard, but the high light of this meeting was the address of Dr. Julian P. Price, Secretary of the South Carolina Medical Association and Editor of its *Journal*. This breakfast will probably be made a permanent feature of our state meetings.

* * * *

Apparently the experiment of Norris Smith, Chairman of the Section on the Practice of Medicine, of having a number of short talks—three to five minutes—instead of the conventional fifteen minute papers, was quite successful. The Medical Library, in which this section held its meeting on Tuesday afternoon, was filled, and the audience remained to the end. The comments heard afterward were almost uniformly favorable.

* * * *

The banquet Tuesday night was the high water mark of entertainment for a decade or more. Oren Moore made an ideal toastmaster. Mr. James Gheen, of New York City, lived up to his reputation as one of the country's best after-dinner speakers. A few favorite stories were funnier than ever, but most of the ones he told were fresh. His

audience even forgot the war until he told of the salesman who ran out of gas on a country road and waked up the proprietor of a little store who sold gasoline and auto accessories. While the man was fumbling with the lock of his gas tank, the salesman, in an effort to make conversation, said something about MacArthur's stand at Bataan. "MacArthur? MacArthur? Who is he?" quoth the dealer; whereupon the salesman said, "Never mind about the gas, buddy; give me four tires."

* * * *

The high light of the meeting, from the scientific view, was reached in Dr. Paul White's masterly address on recent advances in cardiovascular disease. Although his was next to the last paper on Wednesday afternoon, the ball room of the Hotel Charlotte was filled with those who stayed over to hear him. It was gratifying to many to hear him say that the greatest advances made in the diagnosis of cardiovascular disease have been in clinical observations rather than in laboratory procedures.

* * * *

Three of the most deservedly popular leaders our State Society has ever had took part in the installation ceremony on Wednesday afternoon, when Webb Griffith turned the gavel over to Donnell Cobb, who in turn introduced James Vernon as President-Elect. It is hard to imagine three men more generally acceptable to the entire membership than these.

A CHAMBER OF COMMERCE HONORS MEDICINE

On March 13 the Winston-Salem Chamber of Commerce gave a "public affairs" dinner recognizing the place of the medical profession. As a result of a sort of Gallup poll of the local medical profession Dr. Morris Fishbein was invited to address the meeting, as "the best known combination of speaker and doctor in the nation." Right nobly did the guest speaker live up to his reputation. The meeting was open to the public, and the ball room of the Robert E. Lee Hotel was filled with representative gathering. For an hour Dr. Fishbein kept his audience at alert attention with his discussion of "The Doctor's Place in the Community". He said many things that the public should know—for example, that, notwithstanding the great viewing with alarm of the poor physical status of our youth, the facts are that in the Civil

War the average recruit five feet, seven and a half inches tall weighed 136 pounds; in the first World War, 144 pounds; in the present draft, 150 pounds. Undoubtedly most of those present left with a renewed respect for the medical profession. The example of the Winston-Salem Chamber of Commerce might well be followed by others.

* * * *

CIRRHOSIS OF THE LIVER

In no other field is the power and efficacy of a new idea more apparent than in the study of disease. A syndrome may seem to present an impenetrable barrier to further progress, until some brilliant mind clears the road by means of a fruitful suggestion. Pernicious anemia, diabetes, and the ever widening field of chemotherapy well illustrate the point.

The cirrhotic liver, with its disabling consequences, has long been a difficult problem. Alcohol has been blamed for the hepatic injury which leads to scar-tissue replacement, but the modern concept is *not* that the alcohol is directly responsible—though surely it is injurious in large quantities—but that the alcohol so injures the mucosa of the digestive tract that toxic substances reach the liver and the needed vitamins are not delivered to this great chemical retort for further elaboration. An additional reason for this condition of avitaminosis is that chronic alcoholics do not ingest sufficient food-stuffs to furnish the needed vitamins, as is attested by the frequency of "alcoholic" neuritis.

These basic theories have been put to the test of animal experimentation by several observers, and the results of such studies have been applied to therapy in the human sufferer from cirrhosis. Butt and Snell⁽¹⁾ have recently summarized the subject, and recommend that cirrhotic patients be fed a diet containing 110 to 145 Gm. of protein daily, only half of which is derived from meat; that fats be strictly limited (60 Gm. daily); and that carbohydrates be given in relatively large amounts (350 to 500 Gm. daily). Then, basing their reasoning on the important work of Patek⁽²⁾, they suggest that *all* the vitamins be fed in *adequate* amounts (A and D in concentrated fish liver oil, 25,000 to 50,000 international units daily; 8 to 12 fluid ounces of citrus fruit juices daily; brewer's yeast, 30 to 50 Gm. daily, mixed with tomato juice or milk;

aqueous liver extract, Valentine's, 1 ounce daily, or one of the crude liver extracts in 3 to 5 cc. doses, three times weekly).

Over a five year period the results of such dietary and vitamin therapy in *early, not too far advanced cirrhosis*, have been most encouraging. Obviously, early diagnosis is *all* important. "Much more attention should be paid to patients who have mild digestive disturbances, slight loss of weight and a palpable liver or spleen."

1. Butt, H. R., and Snell, A. M.: Recent Trends in Treatment of Cirrhosis of the Liver, Proc. Staff Meet. Mayo Clinic, 17:241 (April 22) 1942.

2. Patek, A. J., Jr.: Treatment of Alcoholic Cirrhosis of the Liver with High Vitamin Therapy, Proc. Soc. Exper. Biol. & Med. 37:329-330 (Nov.) 1937.

* * * *

IN UNION THERE IS STRENGTH

Two reports submitted to the recent meeting of the House of Delegates should be considered as supplementing each other. They are Dr. Manning's report on the Hospital Saving Association and Dr. Ham McKay's report for the Committee on Socialized Medicine. While Dr. Manning's report showed a good year for the organization, he stated that the greatest danger ahead of the Hospital Saving Association is the competition of the commercial insurance companies, which are underbidding the Hospital Saving Association by offering at a lower rate a much inferior contract.

In connection with this should be read the recommendation from Dr. McKay's report that a committee be appointed by Dr. Cobb, as President of the Society, "to study and negotiate with the proper officers, or boards of directors, of the three insurance companies now approved by the House of Delegates of the Medical Society of North Carolina . . . The principal function of such a committee would be to bring about a union of these medically sponsored insurance companies . . . The committee believes that such a union would give the State Medical Society one strong non-profit insurance company which would be sponsored by and would receive the support of the entire medical profession of the state and the state hospital associations."

The course recommended by the Committee on Socialized Medicine seems so logical that little comment is needed. Let us hope that the committee to be appointed by Dr. Cobb will be successful in its task; for it has the support of an overwhelming majority of the society's membership.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST COLLEGE

L. L. F., a 50 year old farmer and factory worker, was admitted to the Burrus Memorial Hospital, High Point, on January 29, 1942. The family history was irrelevant and the past history was negative except for hypertension of several years' duration and a stroke about three years ago. The present illness began at noon on January 29, 1942. At that time, immediately before a meal, the patient noticed a mild pain in the epigastrium and lower chest. He consulted a physician, who gave him a cathartic. This pain was not severe and improved so that he returned to his work. At 4 o'clock on the same afternoon he was seized with an excruciating pain in the same region, which radiated upward over his chest. He stated that this pain was markedly aggravated by deep breathing and was relieved entirely by holding his breath. At the same time he had a feeling of numbness, but no pain, in his right arm. He vomited two or three times, but vomiting was not excessive. He was seen again by the same physician, who sent him to the hospital.

On admission at about 8 p.m., or about four hours after the very severe pain started, he was found to have an axillary temperature of 97.4 F. and a leukocyte count of 20,000. At that time there were no abnormal physical findings except for a blood pressure of 212 systolic, 130 diastolic, which was about his usual level. On the morning of January 30 his systolic pressure had dropped 90 points and the diastolic pressure had declined about 40 points. At this time he was gray, pale and definitely in a state of shock.

On the afternoon of January 30 the color and general appearance had improved, and at that time the following features were impressive: The patient was rather stuporous from morphine, but responded to questions. He complained of pain on taking a deep breath, and said that his pain was relieved by holding his breath. There was definite, although not striking distention of the veins of the neck. Respirations were about 12 to 16 per minute and were Cheyne-Stokes

in character. The left side of the chest was fuller than the right but moved decidedly less than the right. The diminution of movement was particularly marked in the left upper region. A striking feature was that, although there were marked pulsations of the entire left side of the chest with the heart beat, no point of maximum impulse could be felt in spite of the history of well marked hypertension. The cardiac dullness could not be made out, nor could the cardiac flatness. There was hyper-resonance and almost tympany in the region of the heart. The right border could be poorly percussed about 5 cm. to the right of the sternum. Heart sounds were loud. The pulse was bounding. The maximum systolic pressure was 130 and the minimum diastolic 90. The pulse was distinctly paradoxical, there being about a 15 mm. difference in the blood pressure between inspiration and expiration. On careful auscultation the heart sounds seemed slightly scratchy at the base, but one could not be sure. There was also a suggestive "clunking" sound at the base of the heart, but this, too, was quite indefinite. However, in the suprasternal notch there was a well marked to-and-fro rub synchronous with the heart action, and a distinct systolic "clunk". Over the left upper lobe anteriorly the breath sounds were well heard and were not abnormal in quality. However, in this same region the percussion note was markedly tympanitic as compared to the right. At the left axilla, and to a lesser extent in the left base, there was well marked tubular breathing, which was somewhat suppressed. In this region there was flatness and egophony with, however, well transmitted tactile fremitus. The "coin sign" could not be elicited. Examination of the right lung revealed no abnormalities of any kind, except that the right border of the heart seemed to be, on percussion, definitely to the right of the normal position. It was noted that turning the patient on the right side for examination caused intense cyanosis, dyspnea and pain. Turning the patient on the left side caused no such symptoms. The abdominal examination was not remarkable. The patient's color at this time was fairly ruddy and distinctly better than it had been the same morning.

It is of importance to note that the physical findings which were so striking on the afternoon of January 30 were not present on the evening of January 29 when he was carefully examined, and were not noted on

the morning of January 30 when he was casually examined.

An x-ray was taken with the patient lying on his back. This showed marked obliteration of the entire lung field on the left. The shadow of the density was possibly not as great as that of fluid, but was very much greater than that of air. The patient was then turned on his left side and another plate was taken. This showed extreme density of the entire lung field and looked as though the entire left side of the chest were filled with fluid. An electrocardiogram on the morning of January 30 showed no abnormality of any kind other than a left axis deviation and rather striking prominence of the T wave in lead IV, which had a higher voltage than usual. His white blood cell count on the afternoon of January 30 was 24,000.

On the morning of January 31 the patient had become very much worse and was practically moribund. At this time the left side of the chest was tapped and pure blood was obtained. He died a few hours later.

Discussion

DR. ARTHUR GROLLMAN: The outstanding points in this report were: (1) blood in the left thoracic cavity, (2) a displacement of the heart to the right, (3) physical signs suggestive of a mass in the mediastinum obstructing the left bronchus, and (4) lack of evidence of myocardial failure. These findings immediately suggest a rupture of the aorta as the probable diagnosis. Since there is no history suggesting a preexisting aneurysm, we must conclude that we are dealing with a rare instance of spontaneous rupture rather than with the rupture of an aneurysm. The rupture in this patient must have occurred in the descending portion of the aorta rather than in the arch or in the ascending portion (where most of them occur). The locus of the break must have been opposite the point (about the level of the fourth thoracic vertebra) where the descending aorta crosses the left bronchus. This explains the very carefully noted and described physical findings in the patient, as well as the location of the pain. Because the left bronchus was occluded, air could enter the lung on inspiration but could only be partially expelled on expiration—hence the observed fullness and limitation of movement of the left chest. As a result of the over-distention of the left lung and the presence of blood in the thorax there was tym-

pany with tubular breathing over the left upper lobe anteriorly, and flatness to percussion and egophony at the base. Interference with the ventilation of the left lung was responsible for the fact that turning the patient on his right side resulted in cyanosis and dyspnea; this maneuver fixed the right chest, which alone could be aerated. The paradoxical pulse is explained by the presence of a mass in the mediastinum. The movements of the left chest with the absence of a point of maximum cardiac impulse, and the shift of cardiac dullness to the right are what one would expect to follow the presence of blood in the left thoracic space with inflation of the upper portions of the lung due to compression of the bronchus. In view of the rapidity with which the leukocyte count rose to 20,000, we must explain this rise as a reflex phenomenon initiated by impulses from the aorta. Leukocytosis induced by stimuli from the central nervous system is known to occur, although it is infrequent.

As regards the etiology of the observed rupture, we must conclude in the absence of other details in the history that it resulted from medionecrosis secondary to disease of the nutrient vessels in the aorta. The first symptoms observed were probably due to thrombosis of these vessels. Four hours later, the rupture occurred, with the formation of an aneurysmal dilatation which compressed the left bronchus. Gradual leakage, together with a second tear, ultimately completed the process. The disease of the vasa vasorum was probably secondary to the long-standing hypertension, which was, I believe, of the so-called "essential" type. At autopsy, therefore, other evidence of the usual findings of vascular changes associated with hypertension, together with atherosclerosis, would probably be found.

Clinical Diagnosis

Rupture of a bronchial artery.

Dr. Grollman's Diagnosis

Spontaneous rupture of the descending portion of the aorta due to medionecrosis.

Left hemothorax.

Essential hypertension with generalized arteriolosclerosis.

Anatomical Report

An irregular tear was demonstrated in the aorta 8 cm. above the aortic valve. The area of rupture involved approximately two-

thirds of the circumference of the vessel. The torn edges were separated for a distance of 8 mm. and the base of the crater was formed by blood clot. From this area large amounts of blood clot extended in all directions. The blood under pressure had dissected upward as far as the neck, and downward as far as the bifurcation of the aorta. The pericardium was markedly involved, but the sac was free of blood.

The left pleural cavity contained about 300 cc. of blood and blood clot. The entire lower lobe of the left lung and the posterior two-thirds of the upper lobe appeared to be airless, while the anterior portion of the upper lobe of the left lung was very crepitant and appeared to contain more air than normal.

Microscopic examination of the point of rupture revealed irregular edges. The vasa vasorum were sclerotic, and in many instances lumen obliteration was complete. The kidneys and other organs showed arteriolosclerosis and the heart was of the type seen ordinarily in hypertension.

Arterial rupture was of course due to ischemic necrosis which in turn was a result of arteriosclerotic narrowing and obliteration of the intimate vasculature of the organ.

Anatomical Diagnosis

1. Arteriosclerosis of the vasa vasorum of the aorta resulting in necrosis of the media with spontaneous rupture of the vessel.
2. Left hemothorax.
3. Myocardial hypertrophy.
4. Generalized arteriolosclerosis.

Early Discovery of Tuberculosis—For the great majority of patients with chronic pulmonary tuberculosis, even those with advanced disease, there was a time in their illness when their lesion was so minimal that treatment was chiefly a matter of a few months' bed rest under the care of the general practitioner. The key problem, therefore, in chronic pulmonary tuberculosis is not how to treat the disease but rather how to discover it in time. There is no disease where the fate of the patient is more in the hands of the general practitioner. His understanding of the nature and potentialities determines more than anything else the ultimate results of treatment. Just as a truly early lesion is almost a guarantee of certain and prompt cure under proper management, inasmuch as approximately 96 per cent of early cases recover, so in the advanced cases, even with the most skilful management by pneumothorax, thoracoplasty, etc., the chances for recovery are little better than half. —Edgar Mayer: *Treatment of Pulmonary Tuberculosis From the Standpoint of the General Practitioner*, New York State J. Med. 42:812 (April 15) 1942.

CLINICO-PATHOLOGICAL CONFERENCE

DUKE UNIVERSITY SCHOOL OF MEDICINE

DURHAM

A 22 year old colored female was seen in the medical outpatient clinic on March 17, 1942, with a chief complaint of recurrent gnawing epigastric pain of four days' duration.

One brother was found to have tuberculosis at the age of 29, and is now in a sanatorium; otherwise the family history was negative. The patient had been married seven or eight months; her husband, aged 35, was living and well. She had one child, aged 6, living and well. As far as could be determined the patient had no cardiac or toxic symptoms associated with her one pregnancy. Her previous health had been excellent. She had had a few of the childhood diseases without sequelae. About one year ago she had a catching pain in the left hip which lasted for about three weeks, necessitating about one week's bed rest. She denied any other joint involvement, epistaxis, abdominal pain, fever or weight loss associated with that illness. There was no history of chest pain, edema, palpitations, orthopnea, cyanosis, dyspnea, cough or hemoptysis. The patient's average weight was about 146; the weight upon admission was 124.

The patient was well until eight days before admission, when she suddenly felt hot and weak and noticed that her heart began to flutter. After she lay down for a few minutes these symptoms slowly disappeared. Since that time she had had four similar attacks. Four days before admission she noticed the onset of a nagging or gnawing dull aching pain in the epigastrium. This pain lasted for a few hours and gradually disappeared. Since then, however, she had had the same type of pain almost continuously, associated with nausea but no hemoatemesis. Two days before admission she developed a dull aching pain in her right shoulder which did not seem to be related to the epigastric pain or palpitation. During the two days previous to admission the patient had to sleep sitting up, and was unable to do any work.

Her temperature on admission was 37.2 C., the pulse 165, respirations 20, blood pressure 100 systolic, 80 diastolic. Physical

examination revealed a slightly orthopneic female without any evidence of cyanosis. There were a few shotty, non-tender, freely movable cervical nodes. The tongue was heavily coated and quite dry. The thyroid gland was not palpable but the cervical veins were somewhat distended. The lungs were clear to auscultation and percussion. There was no precordial thrill. The left border of cardiac dullness extended 8 cm. to the left of the midsternal line in the fifth interspace. The heart sounds were rapid and slightly irregular; there were no murmurs. The heart sounds were forceful but the pulse was weak and very difficult to count. Carotid sinus pressure did not affect the cardiac rate or rhythm. There was marked tenderness over the epigastrium and right upper quadrant, but the liver was not thought to be enlarged. No abdominal masses were palpated, and there was no evidence of either sacral or ankle edema. Otherwise the physical examination was negative.

At this time it was thought that the patient had neurocirculatory asthenia and sino-auricular tachycardia, and for that reason a fluoroscopy of the chest and an electrocardiogram were done. During the next twenty-four hours all of the patient's symptoms became slightly more marked, but no new symptoms or physical findings could be elicited. It was the opinion of the senior consultant that there was no cardiac enlargement or murmurs and that carotid sinus pressure had no effect on rate or rhythm. Also it was his impression that there was no serious underlying heart disease. He did not think that the patient had cardiac failure.

Laboratory examination showed the hemoglobin to be 79 per cent. There was a slight trace of albumin in the urine, which had a specific gravity of 1.026 and an occasional red blood cell. The blood Wassermann test was negative. Fluoroscopy and films of the chest showed a diffuse linear increase in markings throughout the lung fields with enlargement of perihilar lymph nodes in both the left and the right sides. Cardiac pulsations were almost imperceptible but the heart was not enlarged. The esophagus appeared normal when barium was swallowed, and the trachea was neither compressed nor deviated, but the mediastinum was filled with enlarged lymph nodes. The electrocardiogram revealed a ventricular tachycardia, rate 180. The QRS complexes showed

predominant negative deflection in all leads; there were notched, slurred, and widened QRS complexes in all leads, and cyclic interruption of ventricular extrasystoles in lead III, probably from a different focus. Carotid sinus pressure had no effect. The ventricular tachycardia was consistent with myocardial disease.

The patient was admitted to the ward and placed at complete bed rest in a semi-recumbent position. She was given .4 Gm. of quinidine sulfate immediately, and this dose was repeated twice at hourly intervals, for a total of 1.2 Gm. At this time the cardiac rate was 156 to 160. Five hours after the beginning of quinidine therapy the patient was given an additional dose of .4 Gm. Seven hours after admission, at which time the patient had received 1.6 Gm. of quinidine sulfate, she was resting fairly comfortably, sleeping some occasionally without sedation. At this time the apical rate was 90 per minute and slightly irregular; sounds were forceful. Approximately nine hours after admission the apical rate was checked by the nurse in charge, who stated that it was 80. About ten hours after admission the patient gasped a few times for breath and expired quietly. There is no knowledge of the cardiac rate or rhythm just prior to death.

Discussion

DR. CHRISTOPHER JOHNSON: It seems reasonably clear from the history and physical findings that the patient's difficulty was cardiac, and that the evidences of disturbed circulation were due not to cardiac failure *per se*, but to failure of the rapidly beating heart to act sufficiently as a pump. The development of marked tachycardia is usually followed by increased venous pressure, and in spite of the negative physical findings, one might assume that there is engorgement of the liver. This rapid development of chronic passive congestion might account for the epigastric pain, nausea, and vomiting. Often it is difficult to decide whether the patient admitted to the hospital in cardiac failure has nausea and vomiting from the failure itself, or from over-dosage of digitalis.

Once in a while a patient with ventricular tachycardia will make a satisfactory recovery, without evidence of serious underlying cardiac damage, but these cases are rare; and the almost universal rule is that ventricular tachycardia is indicative of severe

underlying myocardial damage. The disorder of rhythm is most frequently encountered in patients with myocardial infarct. The mode of termination in this case is unknown, but the most frequent termination in ventricular tachycardia is the development of ventricular fibrillation.

The history and general findings were not suggestive of the rheumatic type of heart disease, and in this connection the normal temperature on admission should be noted. The white blood cell count has not been given. One might consider the rare possibility of a coronary occlusion, but this is practically unknown in an individual of 22 years. The history would indicate that the patient's heart was entirely normal up until the onset of her first symptoms eight days prior to admission.

The following points seem to be of significance:

1. Her brother is now in a sanatorium with tuberculosis.
2. The patient's weight fell from 146 to 127 over an unknown period.
3. Enlarged perihilar lymph nodes were noted in an x-ray film of the chest.
4. Ventricular tachycardia, suggesting an irritable focus in the heart, generating impulses at a rapid rate, was present.

In view of these findings, it would seem that the correct clinical diagnosis in this case would be tuberculous myocarditis or possibly a single tuberculous focus in the ventricle. This is a rare condition, but it would appear that this is an unusual case, and therefore the diagnosis of a rare condition is perfectly permissible. Even though this diagnosis may be entirely incorrect, it seems to me that it is the only one possible with the clinical information at hand.

Pathological Findings

DR. STEDMAN SMITH: The autopsy was done approximately seven hours after death. The body was that of a well nourished and well developed colored female looking approximately the stated age of 22. There were no abnormalities noted in the external examination.

Thoracic cavity: The left pleural cavity contained 150-200 cc. of a rather cloudy, yellowish green fluid. The pleural surfaces were all smooth and glistening except at the left apex, where there was a rather firm,

fibrous adhesion. The lungs were gray in color and mottled with black streaks and fairly well collapsed. The pericardial surfaces were all smooth and glistening, and there were about 20 to 30 cc. of a rather clear yellow fluid present.

The mediastinal lymph nodes were greatly enlarged and fleshy in consistency. Two of the upper mediastinal groups of nodes measured 7 or 8 cm. in diameter, and were nodular; some of the nodules were quite firm. The cut surface showed a fleshy consistency, and in the central portion of many of the nodes there was a dark, black discoloration with old fibrous scars.

Heart: The epicardium was smooth and glistening. The large vessels had their normal relationships. The aorta was smooth and elastic with a few small yellowish plaques about the coronary orifices which, however, did not occlude the lumen. The endocardium was smooth and glistening. The mitral valve showed some nodular thickening, but the rest of the valves were fine and filmy. The heart weighed 225 Gm. None of the valves showed any evidence of stenosis or incompetence. The left ventricular wall measured 2.5 cm. in thickness, and the right ventricular wall .5 cm. The coronaries were patent throughout and the walls were smooth. On the cut surface of the heart the myocardium presented a firm yellowish white tissue which completely replaced the muscle tissue in all the papillary muscles of the left side and extended almost completely through portions of the wall in the left ventricle, there being only a thin shell of myocardium measuring 1 or 2 mm. in thickness in some areas. Very little of this change was noted in the right side of the heart, and that which was present was located in the papillary muscles.

Lungs: The pleural surfaces were all smooth except for one tag at the left apex. Cut surface showed the color to be pinkish-gray, with the upper lobe and the region about the hilus more gray in color than the rest of the lung. The upper lobes were quite firm and showed very little crepitation; after a short time in a fixative there were multiple small nodules noted throughout which measured less than 1 mm. in size and were yellowish white in color. The hilar lymph nodes also showed the enlargement and fleshy consistency noted in the mediastinal nodes.

The bronchi contained a slight amount of frothy material.

Abdominal cavity: All the surfaces were smooth and glistening and all the organs bore their approximately normal relationships. The spleen weighed 225 Gm. and had a dark blue, wrinkled capsule. A cut section showed the usual fleshy consistency. The malpighian bodies were easily made out. There was one rather firm, fibrous white plaque in the capsule of the spleen which measured about 1 mm. in thickness and did not involve the pulp beneath. The rest of the abdominal organs showed nothing especially worthy of note, except that there was a marked lymphadenopathy in the para-aortic chain in the abdominal region. These glands presented the same gross appearance as those in the thoracic cage, being large and fleshy in color.

Microscopic examination. At the wall of the left ventricle and in the papillary muscles a diffuse granulomatous inflammatory process was seen which consisted mainly of small round cells and giant cells, both of which were the typical Langhans variety. Muscle fibers in this region were completely lost and in the peripheral portions could be seen undergoing degenerative changes. There was an increase in fibrous connective tissue which was of a relatively fine character. In some areas in the left ventricle this diffuse granulomatous inflammatory process occupied about three quarters of the entire wall. In other areas it was more patchy and there were small, tubercle-like lesions containing inflammatory and epithelioid cells scattered throughout the myocardium. The pericardium was uninvolved but the endocardium could be seen to be undergoing inflammatory change in many areas. There were no mural thrombi located on the endocardial surface, however.

Throughout the lungs there were scattered tubercles, many containing giant cells of the Langhans type, others having multinucleated cells with occasionally as many as fifty nuclei. There was a mantle of small round cells about most of the tubercles.

Hilar lymph nodes showed a marked degree of scarring, with dense fibrous connective tissue and a good deal of pigment in the central portion of the scar. About the scar, however, there was hyperplastic lymphoid tissue which contained numerous small tubercle-like lesions consisting of

lymph nodes which for the most part were merely epithelioid cells with some fibrous connective tissue. Occasional giant cells were present, many of which were of the Langhans variety. In many of the nodes, these small tubercles were of the discrete type seen in Boeck's sarcoid. In other cases they were more confluent and collapsing.

The liver and spleen also showed scattered tubercles of the variety just mentioned. It is interesting to note that in the spleen a great many of these epithelioid tubercles occurred in the malpighian corpuscles. Giant cells were relatively rare in the spleen. Acid fast stains of all these lesions failed to reveal any tubercle bacilli. Bacterial stains were carefully studied for evidence of any bacterial organisms or fungi, but none was found.

Interpretation of case: The histological diagnosis in this case certainly lies between tuberculosis and Boeck's sarcoid. The literature contains similar cases, reported under both diagnoses, and in one case reported as tuberculosis the authors were unable to demonstrate acid fast organisms in any of the lesions.

Anatomical Diagnosis

Extensive tuberculous myocarditis (although Boeck's sarcoid cannot be ruled out).

Massive mediastinal lymphadenopathy with moderate involvement of peri-aortic nodes.

Scarring and scattered tubercles throughout both lungs, the liver, and the spleen.

Vitamin Films in Color

Eli Lilly and Company, Indianapolis, announces the release of three 16-mm. silent motion pictures in color descriptive of vitamin deficiency diseases. The films are available to physicians for showing before medical societies and hospital staffs. One deals with thiamine chloride deficiency, one with nicotinic acid deficiency, and the third with ariboflavinosis. The major part of all films concerns the clinical picture presented by the patient with reference to treatment by diet and specific medication. They do not contain advertising of any description, nor is the name of Eli Lilly and Company mentioned.

The films were made at the Nutrition Clinic of the University of Cincinnati at the Hillman Hospital, Birmingham, Alabama, where studies were initiated in 1935, under the joint auspices of the Department of Internal Medicine of the University of Cincinnati and the University Hospitals of Cleveland. Subsequently, these investigations became a co-operative project between the Departments of Medicine of the University of Cincinnati and the University of Alabama, and the Department of Preventive Medicine and Public Health of the University of Texas.

MEDICOLEGAL ABSTRACT

J. F. Owen, M. D., LL. B.,

Raleigh

Naturopaths: In suits for negligence non-drug giving practitioners are judged by their own standards. Members of their profession are competent as expert witnesses as to qualifications. Being unlicensed is no evidence of negligence.

This is a case in which an unlicensed practitioner of naturopathy was sued in an effort to recover damages for the wrongful death of a child. The administrator, who was the father, instituted the suit. The complaint alleged that the defendant held himself out as a doctor of naturopathy, possessing the requisite skill and learning to diagnose and treat diseases by natural methods without the administration of drugs or surgery; that without having been licensed or qualified under the statute as a non-drug giving practitioner and without possessing the requisite knowledge, learning and skill in the subjects of anatomy, physiology and diagnosis he undertook to treat the plaintiff's son with the result that the child died because of negligence and want of skill of the defendant; that the child had diphtheria, which the defendant negligently and improperly treated as tonsillitis, permitting the child to have only fruit juices for a period of two weeks and failing to give proper care and attention until the child was almost in extremis, when regular practicing physicians were called in and diphtheria antitoxin was administered, but too late to save the child's life. In his answer the defendant denied the above mentioned allegations of negligence and want of skill in the treatment of the plaintiff's son; he alleged that the treatment given was in accord with the teachings and methods of naturopathy, which he was qualified to practice, and denied that the death of the child was due to any act of negligence on his part.

At the trial the defendant produced two naturopaths as expert witnesses, but the court excluded their testimony, holding that they were not qualified to testify as experts. It was intended to show by these two practitioners that the treatment of the child was in keeping with the practice of naturopathy generally and conformed to the teachings and practices of naturopathy in diseases of this kind.

It was brought to the attention of the court that the doctor had not gone through the formality of obtaining a license for the practice of his profession in this state. The defendant's attorneys requested the court to charge the jury as follows: "The court charges you further that the fact that the defendant did not procure a license to practice naturopathy in this state cannot be considered by you as evidence of negligent treatment of plaintiff's intestate. The fact that he had no license to practice his profession could not be a proximate cause of the injury complained of. The plaintiff must satisfy you by the greater weight of the evidence of the negligent or unskillful treatment on the part of the defendant, and his failure to procure a license is no evidence of either." The judge refused to give the charge as requested by the defendant's attorney, and as a consequence the jury evidently took into consideration the fact of his being unlicensed in arriving at their conclusion. The jury returned a verdict favorable to the plaintiff and awarded him the sum of \$1400 in damages, whereupon the defendant appealed to the Supreme Court.

When the case came on for consideration before

the Supreme Court this tribunal stated that practitioners of particular schools of healing must possess and apply with reasonable care and diligence the skill ordinarily possessed by like practitioners, but are not required to possess the highly technical skill or the knowledge and learning of the well recognized schools of medicine and surgery. The court also found that the witnesses intended to be placed upon the stand by the defendant as experts should have been included, inasmuch as they were in fact experts upon the question of the proper treatment of a patient under their system of practice. With reference to the defendant's being unlicensed, it was held that this was irrelevant to the issue of negligence involved in the civil action and that it was error to admit evidence and submit issues in the civil action relating to the defendant's failure to obtain license. He should, however, be indicted and tried on a criminal charge for failure to comply with the law. The Supreme Court upon the basis of the above findings ordered a new trial for the defendant. (North Carolina Supreme Court, v. 210, p. 230. Decision rendered fall term, 1936).

MILITARY MEDICINE

LETTER FROM STATE CHAIRMAN FOR
PROCUREMENT AND ASSIGNMENTRaleigh, N. C.
May 9, 1942

To District Chairmen and County Defense
Boards for Procurement and Assignment Service:

I am trying to keep you informed about all matters concerning our office and duties. To date the Central Office has sent to us the names of 130 physicians for clearance. Of this number about 85 per cent have been investigated by our Defense Committees and District Chairmen and marked available.

On April 24, 1942 the State Chairmen of the Procurement and Assignment Office of Civilian Defense for Medical Services were called to Washington for a conference by Dr. Frank Lahey, the President of the American Medical Association. The purpose of the meeting was to formulate plans for the immediate procurement of 5,000 physicians within the next sixty days. 14,000 additional physicians will be needed by the first of January, 1943. It is planned to have about 28,000 physicians in the Army by 1943. In the United States there are approximately 180,000 physicians. Of these there are 8,000 women physicians, 8,000 retired physicians, and 8,000 alien physicians. This leaves a pool of 156,000 physicians from which to draw the 28,000 physicians needed for the Army. Many of these physicians are over 55 years of age and are, therefore, not eligible for commissions in the Army.

For the reason that many of the older men are physically impaired and the fact that only a limited number of commissions in the higher ranks are available, which are suitable to older men, those over 55 are not being accepted by the Army. It is desired to fill in the ranks of the Medical Corps with men of 45 and younger as far as possible.

The first pattern of a war man power board was set up by the American Medical Association.

The American Medical Association list showed that 50 per cent of the physicians would go voluntarily. Thirty thousand physicians signed up to go whenever the Army needed them immediately after Pearl Harbor. The men of the age group of

60 to 80 were the most bloodthirsty. The program for securing the necessary physicians in the younger age groups for one reason or another lagged. Therefore, a recruiting campaign is to be set up in every state to secure the necessary personnel for the Medical Corps. To this state have been assigned Major Roy Tatum of the Medical Corps and Major Carmichael of the Infantry Branch of the Army as Recruiting Officers. They are to work with the Procurement and Assignment Service in this state. It is, therefore, necessary for us to have a complete list of physicians of North Carolina embodying their ages, health, dependency, specialty, and availability.

Those marked available will be approached by the Recruiting Officers and asked to apply for a commission in the armed forces of the United States. These physicians will be aided in securing an examination at an early date at the nearest Army Station Hospital and commissions will be issued as quickly as possible.

Every physician has been furnished an enrollment form which he is expected to fill in immediately. The names of all who have expressed willingness will be transmitted to the Recruiting Board. July 1 is the final date for the completion of forms.

It has been the plan of the procurement and assignment office of North Carolina to organize the state so that every physician in the state could be classified as to his availability and lists be maintained which were up to date. These lists make it possible for us to give to the Central Office in Washington almost immediate information about any man whose name they send to us asking about his availability for service. In addition it gives to the Recruiting Officers a list of names which they can use for the immediate need which is imperative. This has been accomplished by loyal and unselfish endeavors of the Defense Committees of the county societies and the Chairmen of the different sections of North Carolina who have helped to get some counties to organize defense committees and have been cooperative in securing information concerning the available physicians in their section. We are cooperating with the Selective Service Boards in this and in other states in supplying necessary data as to availability.

North Carolina is a large state and is largely rural in population. It would not have been possible to organize and secure adequate and prompt information without the aid of our District Chairmen and our Defense Committees. There has been a patriotic and hard duty to perform. On the basis of present army needs North Carolina's proportionate allotment would be approximately 260 men. For the total of 28,000 physicians for the Army by 1943 our proportionate share would be 520 physicians. It was stated from the Surgeon General's Office that the needs of the Army could be filled by physicians between the ages of 24 and 45.

Up to the age of 37 a man is recommended for a first lieutenancy. If he has exceptional training in a specialty and has passed the American Board examinations in his specialty he is recommended for a captaincy. Between the ages of 37 and 45 he is recommended for a captaincy. If the man between the ages of 45 and 50 cannot be commissioned as a Major, it is best not to commission him. The man above 50 will be scrutinized very carefully and in addition to the usual physical, serological, and x-ray examinations will have to furnish a satisfactory electrocardiographic tracing.

Lieutenant Colonels and Colonels will be very

scarce, as there are few vacancies in these ranks. They will be above 50 years of age. Creative units or affiliated units, as base hospital units are called, will be taken into service as needed. Five have been activated into the service and are now units of the United States Army. The great need is for younger medical officers to serve with the troops.

The Pay Schedule for Medical Officers is as follows:

	With Dependents	Without Dependents
Lt. Colonel	\$5,588	\$4,676
Major	4,848	3,936
Captain	3,792	3,336
1st. Lt.	3,152	2,696
2nd. Lt.	2,196	2,196

Under the Selective Service Act a commissioned officer's salary covers dependency for his family.

A local Board can re-classify a man at any time. It is necessary to do so at least every six months. If a man refuses to co-operate his local Board may induct him into service as a private. The Army has the final decision as to a man's physical fitness for service. A man can have only two thirty-day deferments by his local Board. If a man turns down a commission offered to him, believing it to be a lower one than he is entitled to, he may be inducted as a private by his local Board.

Men will be accepted for a limited service who have physical defects provided they do not interfere with duty and are not evidences of progressive disease. Veterans who have drawn disability compensation (if this disability no longer exists) and who are able to pass the necessary examinations, will be accepted.

There is a recognized need for a medical administrative corps to replace professional men. An officer candidate school has been established. The minimum course is three months. 500 candidates per month will be taken. Requirements are high for appointments to the Sanitary Corps. Sanitarians, Biochemists and some other highly trained personnel are accepted. Appointments come through the Surgeon General's Office. Pharmacists rate as enlisted men.

A graduate of a substandard school having license to practice in a state has the same legal status as a graduate of a class A school. Osteopaths and chiropractors will not be commissioned in the Medical Corps.

Colonel Sealy of the Procurement and Assignment Office surveyed the physicians of the 3,072 counties of the United States and found that one-third of these are specialists. Of necessity in the Army many physicians who are specialists will have to be used as general medical officers, especially those in the younger age groups. The Army's need for specialists will be determined as the Army expands. For instance 2,500 doctors are needed for the Air Corps now and the need will be 600 per month additional until 1943.

The Selective Service Act still empowers the local board to have control over its registrants, including all physicians registered for the draft. Service in the Army is compulsory only when a man's Board orders it. The right of appeal to the Appeal Board exists.

Again thanking you for your cooperation and assistance, I am

Very truly yours,

Hubert B. Haywood, M.D., Chairman
For Procurement and Assignment for
Medical Service for North Carolina.

OFFICE OF CIVILIAN DEFENSE

Regulations for the administration of the Blood and Plasma Bank Program of the Medical Division of the United States Office of Civilian Defense have now been prescribed, and funds are available for grants to assist approved hospitals in establishing blood and plasma banks. Only hospitals within 300 miles of the Atlantic, Pacific or Gulf coasts are eligible for such grants. After July 1, 1942, these geographical restrictions may be modified, so that grants may be made to inland hospitals. Applications should be addressed to the Chief Medical Officer, United States Office of Civilian Defense, Washington, D. C.

Technical manuals on blood and plasma banks, prepared by the Subcommittee on Blood Substitutes of the Division of Medical Sciences, National Research Council are now available for distribution on request of any hospital to the Chief Medical Officer, Office of Civilian Defense.

The Red Cross has established eighteen donor centers in various parts of the country which are successful in obtaining an adequate supply of blood donors for military purposes. Blood for the production of dried plasma for Civilian Defense purposes will also be obtained from these sources.

Hospitals which establish their own blood and plasma banks with the financial assistance of the Office of Civilian Defense are advised to build up their reserves of blood and plasma by expanding blood collection from relatives and friends of patients who are to receive transfusions. A public campaign for volunteer donors which may compete with the work of the Red Cross should be avoided if possible. If public solicitation is necessary, hospitals should appeal to the local chapters of the American Red Cross for assistance in recruiting hospital donors. Blood donor campaigns by agencies other than the Red Cross will tend to confuse the public and may interfere with the blood collection by the Red Cross for the armed forces.

UNITED SERVICE ORGANIZATIONS, INC.

First aid kits, and preliminary and advanced courses in first aid, are a part of the equipment and activity to be found in many of the 695 USO units in continental United States, it was announced today following completion of a survey by Robert Heininger, Director of the Program Division of United Service Organizations.

Wives of men serving in the armed forces of the nation, as well as the soldiers, sailors and marines themselves, are seeking the advanced instruction, given in co-operation with experts of the American Red Cross, Mr. Heininger said.

"Proficiency in first aid," said Mr. Heininger, "has virtually become a necessity for civilians today, and it is obvious that members of our fighting forces cannot be too expert in first aid. Naturally, USO is extremely pleased at this heightened interest in first aid training, and the increased use of the ever-growing facilities of USO."

Aliens who strike at dawn without warning, killing and maiming our young men, are no more successful in their onslaught than tubercle bacilli that strike youth insidiously at the first flush of adult life. Nor is it any more permissible for those who direct the destinies of college students to be blind and deaf to repeated warnings of the menace that wounds and slays than it would be for a commander to awaken to danger only after the foe had delivered a damaging blow. Charles E. Lyght, M. D. *Journal-Lancet*, Apr. 1942.

BULLETIN BOARD

INAUGURAL REMARKS

DONNELL B. COBB, M. D.

In accepting the Presidency of the Medical Society of the State of North Carolina, no one ever had a more intense feeling of responsibility; no one was ever more appreciative of the confidence, the honor, and the friendship which election to this office implies.

Our retiring President, Dr. Griffith, has made it difficult, by comparison, for anyone to follow him. Fortunately for us, he has been able to devote almost his entire time to the many duties that this office imposes. He has been able to travel from one end of our state to the other, giving us the advice and leadership that come from wise and matured judgment. To follow in such footsteps, at a time when the general tempo of things is rapidly increasing, is not going to be an easy task.

To attempt to project a specific program for us to follow during the coming year, when changes and developments are likely to be rapid and many, would not seem wise. There are certain generalities, however, which we all recognize as essential.

The first and most important of these is the winning of the War. This comes before all else—and in this, our profession must do its part. We know we shall not fail.

The second great responsibility that we have is the preservation of free initiative and free democratic institutions, which includes the preservation of the independence of the practice of Medicine.

Many of us are lulled by the thought that Socialized Medicine has been dissipated by the crescendo of war. Yet social reformists are exploiting it quietly but zealously and with renewed hope of success. Although the War seems far from won, post-war problems already are beginning to excite persons in and out of Government. The physicians who leave their practice and enter the armed services will rely upon the physicians who remain at home to maintain conditions that will make possible their re-entry into civil practice with minimum loss and sacrifice.

Therefore let us see to it that the principles underlying our free institutions are preserved; let us remain on the alert lest we

emerge with a victory in which we find ourselves stifled with regimentation, bureaucracy and socialism.

And finally, permit me to remind you that I accept this office, not as one who is only recently intensely interested in the welfare of our profession, but as one in whom Medicine, its principles and aims and ambitions, have been born and bred. That my grandfather should have been elected to the Presidency of the North Carolina Medical Society forty-nine years ago, and that my father held the Vice-Presidency thirty-seven years ago, are indeed a source of great pride to me. And in carrying on the close tie between myself and my family and this Society I need not assure you that I shall do my utmost for the welfare of our profession—but to do this I need and must have your help.

SECRETARY'S MESSAGE

REPORT OF THE EIGHTY-NINTH ANNUAL SESSION OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

An enthusiastic group of 710 physicians attended the Eighty-Ninth Annual Session of the Medical Society of the State of North Carolina in Charlotte on May 11, 12 and 13. With good weather, an interesting program and a number of outstanding speakers on subjects especially devoted to activities of war measures as they affect civilian physicians, as well as subjects of interest to the general practitioner and to the specialists, one of the most successful meetings of all time was held.

The Scientific and Commercial Exhibits were well displayed and the attention given them was gratifying and, incidentally, was encouraging to all exhibitors.

The three General Sessions were well attended and the seven Section Meetings were exceptionally successful.

The Presidents' and Secretaries' Breakfast, an innovation of this year, held on Tuesday morning at 7:30 o'clock was, from all indications, a success. It will, no doubt, be established as a part of each Annual Session. The group which attended this breakfast was composed of the presidents and secretaries of the component County Societies. They were well repaid for their early rising by the store of knowledge they gleaned from talks by such men as Dr. C. F. Strosnider of

Goldsboro; Dr. J. H. McNeill of North Wilkesboro; Dr. F. Webb Griffith of Asheville; Dr. Wingate M. Johnson of Winston-Salem; Dr. I. H. Manning of Chapel Hill, a former President and a former Secretary of the State Society and the only living man who has had the honor of holding both of these important offices. Particularly informative was the talk by Dr. J. P. Price of Florence, S. C., Secretary-Treasurer of the South Carolina Medical Association. If our county secretaries follow the suggestions of Dr. Price, they will, no doubt, find that the work of their offices as well as that of the Secretary-Treasurer of the State Society will be greatly expedited.

The address of President F. Webb Griffith to the House of Delegates on Monday afternoon and his presidential address before the First General Session on Tuesday morning were well received and were a clear demonstration of the great amount of time and energy which he has spent for organized medicine in North Carolina throughout the year. Dr. Griffith's address at the First General Session was followed by a talk by Dr. Fred W. Rankin, President-Elect of the American Medical Association, and a talk by Brigadier-General H. C. Coburn of Fort Bragg, both of whom clearly sounded the war-time urgency for the doctors of North Carolina and of the nation to do their part in this emergency.

At the Second General Session, which was held on Wednesday afternoon instead of Wednesday morning as has been customary, the conference hall was filled to capacity, showing the continued enthusiasm of the doctors at the meeting. The address by Dr. Paul Dudley White of Boston, introduced as the No. 1 heart specialist of the world, held this audience in rapt attention as some of the newer ideas in the treatment of heart disease were brought out.

The high light of the Third General Session on Wednesday afternoon was the installation by the retiring President, Dr. F. Webb Griffith, of the new President, Dr. Donnell B. Cobb of Goldsboro and the President-Elect, Dr. James W. Vernon of Morganton. With the installation of Dr. Cobb as President, history repeated itself, for our new president is the third member of the Cobb family to hold an important office in the Medical Society of the State of North Carolina. His grandfather, Dr. W. H. H.

Cobb, was President of the Society in 1894. Dr. Donnell Cobb was escorted to the chair by his father, Dr. William H. Cobb of Goldsboro, a former Vice-President of the Society. President Cobb is a worthy successor to his illustrious forebears and to the long list of distinguished men who have preceded him in the office of President of the Medical Society of the State of North Carolina. He has already proven his ability and his devotion to the aims and ideals of our Society and we who know him best can truly say that he is one who "sets the Cause above renown and loves the Game above the Prize."

On Tuesday evening the Society did honor to the retiring President, Dr. F. Webb Griffith, with a Banquet and Ball. In this connection one might say "Life has its compensations," one of which was just to have heard the after-dinner speaker, Mr. James E. Gheen of New York City. The floor show was beyond reproach, and last but by no means least, Dr. Oren Moore served in his own inimitable way as a most successful toastmaster. The banquet was followed by the ball, at which a goodly number enjoyed dancing.

The business meetings of the House of Delegates were carried on with commendable zeal. A report of these meetings will appear in detail in the August issue of the NORTH CAROLINA MEDICAL JOURNAL.

The success of the Eighty-Ninth Annual Session—and it was a SUCCESS—was due in large measure to the untiring efforts and the hearty cooperation of each of the doctors in our host society, the Mecklenburg County Medical Society. The spirit of fellowship and good will which prevailed at this meeting should inspire each doctor who attended to devote himself, his means and his knowledge unstintingly to organized medicine in North Carolina.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Tinsley Harrison, Dr. George Harrell, and Dr. John Williams attended the meetings of the Society for Clinical Investigation in Atlantic City on May 3 and 4. Dr. Harrison presented a paper on the "Separation of Various Blood Pressure Producing Fractions of Renal Extract" before the Association of American Physicians in Atlantic City on May 4.

Dr. Howard H. Bradshaw, Professor of Surgery, addressed the Tennessee Valley Medical Society at Johnson City on May 7. His subject was "Cancer of the Stomach".

Miss Eleanor Mayes, Librarian, attended the meeting of the Medical Library Association in New Orleans May 7-9.

Dr. Tinsley Harrison took part in a symposium on heart disease at the meeting of the North Carolina Radiologic Society in Charlotte on May 12. His subject was "Evaluation of Cardiac Symptoms."

Dr. Arthur Grollman spoke at the Roanoke, Virginia, City Hospital on May 14 on "Clinical Aspects of Endocrinology".

The following members of the faculty appeared on the program of the Eighty-Ninth Annual Session of the Medical Society of the State of North Carolina: Dr. H. H. Bradshaw, who gave a paper on "The Surgical Treatment of Cancer of the Lung" before the Second General Session; Drs. George T. Harrell, Wingate M. Johnson, Robert L. McMillan, John Williams, and Tinsley R. Harrison, who spoke before the Section on the Practice of Medicine; and Drs. Arthur Grollman and Frank R. Lock, who gave talks before the Section on Gynecology and Obstetrics.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. H. D. Bruner, of the Department of Physiology, has been granted leave of absence to work on a special project for The Office of Scientific Research and Development. He will be stationed at the Harrison Laboratory for Surgical Research, at the University of Pennsylvania.

The following members of the faculty attended the meeting of the State Medical Society and the Public Health Association in Charlotte May 11 to 14: Doctors Wm. deB. MacNider, J. B. Bullitt, W. C. George, R. L. Holman, G. L. Donnelly, H. Ward Ferrill, Robt. E. Stone, W. G. Morgan, W. R. Berryhill, Harold W. Brown, H. G. Baity, W. L. Fleming, J. J. Wright, D. F. Milam, Sterling Brackett, and Professor Ruth W. Hay.

Doctors G. L. Donnelly and Russell L. Holman presented a paper before the Section on the Practice of Medicine.

Miss Ruth W. Hay, Professor of Public Health Nursing, Department of Public Health Nursing of the School of Public Health, spoke at the first general session of the North Carolina Public Health Association Meeting, on "The Public Health Nurse's Role in National Defense".

Dr. Milton J. Rosenau, Director of the School of Public Health, was in Ann Arbor, Michigan, May 12 and 13, where he gave several lectures in an inservice training course for operators, owners and managers of milk pasteurization plants, offered by the School of Public Health of the University of Michigan. Dr. Rosenau also gave the address at the Delta Omega meeting on May 12.

Miss Margaret Blee, Assistant Professor of Public Health Nursing, Department of Public Health Nursing, attended the Biennial Convention of the American Nurses' Association held in Chicago May 17-22. This was a meeting of four national nurses' organizations. The theme was "The Nurse's Place in the Present Emergency". Sixty-five thousand nurses will be needed for the armed forces by the end of 1943. North Carolina stood out as having done the foremost work in the recruiting of future nurses. Thousands of nurses were present clad in attractive uniforms representing the Army, Red Cross and the Navy.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

There were 125 fewer births in North Carolina during April, 1942, than during the corresponding month last year, but a decline of 315 deaths also was noted, according to reports compiled by the State Board of Health.

The infant mortality rate continued its downward trend. The total for the month dropped from 421 to 338 deaths per 1,000 live births in the state, which brought the rate from 60.7 to 49.7. The number of maternal deaths for the month fell from 30 to 25, reducing the April rate from 4.3 to 3.7.

Deaths from preventable accidents for April, this year, totaled 116, as compared with 147 the corresponding month last year. The heaviest drop was in automobile fatalities, while deaths resulting from railroad accidents fell from 11 in April last year to 2 the corresponding month this year. There were four deaths from airplane accidents in April, this year, while none occurred in North Carolina in April, 1941. Influenza deaths, which have shown a large decline this year, were cut in half—that is, from 85 last year to 43 this year.

* * *

The Board of Health, in cooperation with the United States Public Health Service, is engaged in an intensive campaign against malaria, to prevent its spread and eradicate it, if possible, in areas adjacent to military bases, of which there already are several in this State, with others under construction and contemplated.

The United States Public Health Service provided an appropriation to apply larvicides and do drainage work in these extra-cantonment areas. On the reservations, themselves, the military authorities are looking after malaria control, but the Board of Health's object is to prevent the breeding of malaria-bearing mosquitoes in areas surrounding the bases, to protect defense workers and others, and to prevent the possible spread of malaria to the men under arms.

The set-up includes a Director of Malaria Control, with four area engineers, and four superintendents and foremen who supervise around 200 workers. Two automobiles have been provided by the United States Public Health Service, also two station wagons and fifteen trucks. The Federal Government will furnish the larvicides, while tools already have been provided for clearing off ditches, in order that the larvicides may be applied.

One engineer and a force of men have been assigned to territory adjacent to Fort Bragg, including such civilian areas as Fayetteville, for example, and other centers of population. Another area headquarters has been established at Wilmington, for protection against malaria in that section of the state, where defense work is in progress and military bases have been established. The Jacksonville and New Bern areas similarly have been protected, and a center will be established at Elizabeth City. The area around Camp Butner, near Durham, also will be adequately protected.

With the supply of quinine dwindling, this work takes on added importance, and your Board of Health is seeing to it that the tragedy of Bataan shall not be reenacted in North Carolina.

It is necessary, according to Doctor Reynolds, who is chairman of the North Carolina Committee on Nutrition, that school lunches consist of real food, and that candy and carbonated drinks shall not be substituted for those elements which build sound bodies and house sound minds.

The records of two fifth grades furnish an excellent study in contrasts. Of the nine dental cavities found in the mouths of the children of one grade, four belonged to a student who admitted that he brought candy from home for lunch each day. In the fifth grade of another school, where candy could be purchased at any time, 28 permanent cavities were found, and many children were observed eating cheap candies at lunch and recess.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The offices of the North Carolina Tuberculosis Association were moved from Winston-Salem to Raleigh on May 14. The new address is Box 468 or 111 West Morgan Street, Raleigh.

* * *

A total of two hundred people, representing twenty-two counties in North Carolina and a number of counties in South Carolina, attended the annual meeting of the North Carolina Tuberculosis Association in Charlotte, April 29. Dr. J. A. Myers, of the University of Minnesota, was the principal speaker at both the morning and luncheon sessions.

Dr. William H. Smith of Goldsboro was elected President of the Association. He succeeds Dr. C. W. Armstrong of Salisbury, who will remain on the executive committee. W. P. Gearing of Asheville was made Vice President; Mrs. Marie B. Noell of Raleigh, Secretary; and Dr. J. J. Combs of Raleigh, Treasurer. In addition to the officers and Dr. Armstrong, Dr. David T. Smith of Duke University and Mrs. Charles E. Platt of Charlotte were elected to the Executive Committee. Three new Directors at Large were elected: Mrs. Thaddeus Cheatham of Pinehurst, Dr. J. J. Combs of Raleigh, and Dr. H. F. Easom of Sanatorium. Mrs. J. W. Bunn of Raleigh and Mrs. W. T. Smither of Winston-Salem were elected representative directors.

The Board of Directors voted that Raleigh will be the place for the next annual meeting.

* * *

Cooperating with Dr. Walker Wilkins and the School Health Coordinating Service, the National Tuberculosis Association and the North Carolina Tuberculosis Association are giving six fellowships to the Negro Health Institutes to be held in North Carolina this summer. Two Institutes for Negroes of six weeks each are to be held this year—one in Durham and one in Greensboro.

INTERNATIONAL COLLEGE OF SURGEONS

The United States Assembly of the International College of Surgeons meets in a four-day session in Denver, Colorado, July 15-18. Headquarters and main assembly will be at the Shirley-Savoy Hotel.

This meeting is open to all physicians and surgeons in good standing in their State Medical Society. It has purposely been opened to this large group that this organization might play its part in the National Defense Program.

Panel Discussions on all aspects of surgery will be held synchronous with the main assembly at the Brown-Palace and Cosmopolitan Hotels.

Operative Clinics will be held at all of the Denver Hospitals Saturday morning on July 18.

STATE BOARD OF MEDICAL EXAMINERS

Because a number of conventions are being held in Raleigh during the week of June 15, the date of the meeting of the Board of Medical Examiners has been changed to June 22. The meeting will be held at the Sir Walter Hotel in Raleigh. Registration of students for examination will begin at 2 p.m. on June 22, and endorsement of credentials for reciprocity at 9 a.m. on June 22.

TENTH DISTRICT MEDICAL SOCIETY

The Tenth District Medical Society held its Spring Meeting in Asheville on May 27, 1942, at the Battery Park Hotel. The following program was presented:

Call to Order — 2:30 P.M.
 Invocation Rev. J. A. Bandy, Asheville
 Address of Welcome James S. Howell
 Response Dr. W. A. Sams, Marshall

Papers

1. "Gunshot Wound of Abdomen": Dr. Charles F. Owen, Jr., Canton.
 Discussion opened by Dr. Robert H. Owen, Canton.
2. "Treatment of Congestive Heart Failure": Dr. C. H. Armentrout, Asheville.
 Discussion opened by Dr. Sam Crow, Asheville.
3. "Internal Diseases of the Eye Seen in General Practice": Dr. J. F. McGowan, Asheville.
 Discussion opened by Dr. C. C. Swann and Dr. Charles Hensley, Asheville.
4. "Diseases Which May Simulate the Acute Abdomen": Dr. W. A. Hoover, Murphy.
 Discussion opened by Dr. John Preston, Tryon.
5. "Pleural Shock and Air Embolus in Artificial Pneumothorax": A. L. Ormond, Black Mountain.
 Discussion opened by Dr. Charles H. Cocke, Asheville.

Dinner — 7:00 P.M.

Battery Park Hotel

Guest Speaker

Dr. Wingate M. Johnson, Winston-Salem — "The Nervous Patient."

Introduction of Guest Speaker, Dr. F. Webb Griffith, Asheville.

Dr. James W. Vernon of Morganton, President-Elect of the Medical Society of the State of North Carolina, made a brief talk.

Officers of the Tenth District Medical Society are: Councilor, Dr. H. S. Clark, Asheville; President, Dr. B. E. Morgan, Asheville; First Vice President, Dr. Frank Wood, Marion; Second Vice President, Dr. L. L. Williams, Spruce Pine; Third Vice President, Dr. J. R. Westmoreland, Canton; Fourth Vice President, Dr. J. L. McElroy, Marshall; Fifth Vice President, Dr. W. A. Hoover, Murphy; Secretary-Treasurer, Dr. D. M. McIntosh, Jr., Marion.

CATAWBA VALLEY AND THERMAL BELT MEDICAL SOCIETIES

The Catawba Valley and the Thermal Belt Medical Societies were entertained by Dr. L. A. Crowell, Sr., in a joint dinner meeting at the American Legion Hut near Lincolnton on May 26. Speakers were Dr. Roscoe McMillan of Red Springs, Secretary of the State Medical Society, whose subject was "North Carolina Medicine Meets the Emergency", and Major McKinnon Carmichael of Fort Bragg, who spoke on the "Medical Needs of the Armed Forces".

BUNCOMBE COUNTY MEDICAL SOCIETY

Dr. Dudley W. Smith spoke to the Buncombe County Medical Society on May 4 on "Experiences During the Bombing of London". On May 18 the Society held its second meeting of the month and heard a talk on "Adolescent Problems: A Brief Survey of This Field for the General Practitioner" by Dr. Daniel J. Sullivan.

GUILFORD COUNTY MEDICAL SOCIETY

Dr. James Watson, Director of the Division of Mental Hygiene of the North Carolina State Board of Health, was guest speaker at a dinner meeting of the Guilford County Medical Society, held at the Sheraton Hotel in High Point on May 7. His subject was "The Physician and the Nervous Breakdown".

POLK COUNTY MEDICAL SOCIETY

The Polk County Medical Society held a business meeting on May 12 to discuss the licensing of a graduate of a British medical school who is now residing in Polk County. Because three of the five remaining members of the Polk County Medical Society have submitted applications for commissions in the U.S. armed forces, a motion was passed that the physician be recommended to the State Board of Medical Examiners for temporary license to practice in North Carolina.

NEWS NOTES

Dr. Benjamin Meriweather and Dr. Hubert Clapp, both of Asheville, have recently been commissioned as Majors in the Army.

Dr. Paul G. Reque of Duke University has entered the Army as a Captain in the Medical Corps. He is stationed at Fort Bragg.

Dr. Harley Brookshire, Jr., of Asheville has entered the Army as a First Lieutenant.

Dr. R. C. Scott of Asheville has been appointed to an important position on the medical staff of the Bethlehem Steel Company, and has moved to Bethlehem, Pennsylvania.

Dr. D. H. Nisbet has moved from Charlotte to Atlantic Beach, North Carolina.

Dr. Robert B. Lawson has moved from Chapel Hill to Winston-Salem.

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* * * *

TWENTIETH ANNUAL SESSION

The twentieth annual convention of the Auxiliary to the Medical Society of the State of North Carolina convened in Charlotte on May 11, 1942. Mrs. Sidney Smith, President, was hostess at a lovely luncheon in the Chinese Room of the Hotel Charlotte on Monday at 1:30. Those present were members of the executive committee and board of directors of the Auxiliary. Immediately after the luncheon the committee and board had a business session at which progressive reports, dealing with war activities and other enterprises, were received from officers, committee chairmen and councilors.

Mrs. Henry L. Sloan of Charlotte, general convention chairman, was in charge of a bridge party for Auxiliary members from all parts of the state Monday night.

The general session of the Auxiliary was held Tuesday morning at 10:30 o'clock at the Charlotte Woman's Club, with Mrs. Smith presiding. The complete transactions of this meeting and the executive board meeting will appear in the September issue of the JOURNAL. This meeting was followed by a delicious luncheon and a fashion show in the Club House. The costumes, presenting new war time styles, were from Montaldo's, and members of Charlotte's younger set acted as models.

Following the luncheon members of the Auxiliary went on a garden pilgrimage, at the conclusion of which the group were guests at tea at the home of Mrs. E. J. Wannamaker.

On Tuesday evening at 7 o'clock the members of the Auxiliary joined with the State Society at a banquet held at the Hotel Charlotte. Dr. Oren Moore of Charlotte acted as toastmaster. A floor show was presented and a humorous speech given by Mr. James Gheen of New York City. The annual Medical Society Ball followed immediately after the banquet.

At 10 o'clock on Wednesday morning members of the Auxiliary visited the Mint Museum of Art. Immediately afterwards Mrs. Joseph A. Elliott entertained at a delightful coffee hour at her home.

MRS. VERNE S. CAVINESS,
Press and Publicity Chairman.

In Memoriam

GEORGE W. KUTSCHER, JR., M. D.

George W. Kutscher, Jr., was born in 1896 in Pennsylvania, and received his M.D. degree from the University of Pittsburgh, in 1923. After completing an internship, he did general practice in Swanao, North Carolina, for a time and then moved to Asheville. During 1931 he interned in pediatrics in New Orleans. Returning to Asheville, he limited his practice to pediatrics. As a result of his ambition and unbounded energy he soon attracted a large clientele. For several years, and until his last illness, he was secretary of the Buncombe County Medical Society, in which office he did outstanding work. Entirely through his initiative the *Bulletin* of the Buncombe County Medical Society was born, and largely through his efforts it grew. In addition to his professional duties, and despite a chronic illness, he was very active in both religious and civic affairs. He was Secretary of the Certified Milk Committee, and he made valuable contributions to medical literature. Besides being a member of local medical societies, the American Medical Association and the Southern Medical Association, he was certified by the American Board of Pediatrics, and was a member of the American Association of Pediatricians. He was a member of the staffs of the Biltmore and the Mission Hospitals and of the Orthopedic Home.

His last fight he bore with Christian fortitude, best expressed in the lines of Browning:

I was ever a fighter, so—one fight more,

The best and the last!

I would hate that death bandaged my eyes and forbore,

And bade me creep past.

No! let me taste the whole of it, fare like my peers,

The heroes of old,

Bear the brunt, in a minute pay glad life's arrears
Of pain, darkness and cold.

Be it resolved: That this society has lost an active practitioner who was ever alert to the advances in medical science and that a copy of these resolutions be sent to his widow and that they be inscribed on the minutes.

J. LaBruce Ward, M. D.,

L. W. Elias, M. D.,

North Carolina Pediatrics Society

CHARLES WEST MOSELEY, M. D.

Charles West Moseley was born on a farm in Elkin township, Surry County, on May 10, 1865. He was the son of James Henry Moseley, who served with the Confederate Army as a member of Company E, Twentieth N. C. Regiment, for two years.

Dr. Moseley attended rural schools and an academy in Yadkin County, and in early manhood was a teacher in Baltimore Academy and Enon Academy. He began the study of medicine with Dr. E. B. Hampton and Dr. J. W. Ring as his preceptors, and graduated from the Baltimore Medical College with the M. D. degree in 1893. He later did postgraduate work at the New York Post-Graduate School, and at the New York Polyclinic and the New Orleans Polyclinic. For three years he engaged in general practice at Lewisville, North Carolina, and for a similar period at Kapps Mill, after which he spent eight years in medical practice at Elkin, during which time he served as mayor of the city. He also spent two years as a general practitioner in North Wilkesboro. In 1907 he came to Greensboro, where he specialized in diseases of the stomach and internal medicine. He was a pioneer in this particular field in this part of the state, his only predecessor in the line of his specialty being Dr. Nesbit of Charlotte. Dr. Moseley was consultant for St. Leo's Hospital, the Piedmont Memorial Hospital, the Wesley Long Memorial Hospital, and Glenwood Park Sanitarium. He was a member of Pi Gamma Mu, an honorary scientific society, and belonged to the Guilford County Medical Society, the Medical Society of the State of North Carolina, the Southern Medical Association, and the American Medical Association. He was listed in WHO'S WHO.

On March 1, 1891, Dr. Moseley was married to Miss Fannie Ogburn McKnight, of Winston-Salem. After her death he married Miss Elizabeth Battle of Greensboro on January 8, 1927.

During his residence in Greensboro Dr. Moseley was deeply interested in community affairs. He served for four years on the city school board. A man of noble character, he was strong in his convictions, and lived an exemplary life of religious devotion. Throughout his life he was active in the Baptist denomination, and he was one of the most active members of the First Baptist Church of Greensboro, where he taught the Men's Bible Class for over thirty years and served as a deacon.

For about three weeks before his death, he was confined to his bed in the Piedmont Memorial Hospital. Always patient and cooperative, he won the affections of all who served him during his illness.

On March 7, 1942, Dr. Moseley died. Though this date marks his decease, he will live on for time immemorial in the hearts of those who felt the influence of his life—a life full and rich because of his unselfish devotion and service to his fellow man.

None will miss him more than those of the medical profession who were closely associated with him. In his going they lost not only a true friend, but a worthy colleague in the field of medicine—a field in which he labored constantly until the end.

Rigdon Dees, M. D., Chairman
Obituary Committee
Guilford County Medical Society

BOOK REVIEWS

Nephritis. By Leopold Lichtwitz, Chief of the Medical Division of the Montefiore Hospital; Clinical Professor of Medicine, Columbia University, New York. 344 pages, illustrated. Price, \$5.50. New York: Grune and Stratton, 1942.

This monograph is based on the author's study both at the bedside and in the laboratory of several thousand patients suffering from kidney disease in its various manifestations. The views expressed in regard to the phenomena of nephritis differ widely in many respects from those generally accepted by American workers. Measurements of such factors as glomerular filtration, tubular reabsorption, clearance and renal function, which have received increasing emphasis in recent years are given little attention because of their failure to add to the clinically important questions of diagnosis, prognosis and treatment. On the other hand, many theoretical concepts are included which, in the reviewer's opinion, are equally impertinent from a clinical standpoint, and in some cases experimentally unsound. For example, the assumption of the extent of "water binding" in the tissues, the role of epinephrine in the organism, or the regulation of blood pressure as expounded will not stand critical analysis. In spite of these criticisms the present book should prove stimulating and helpful to all who are interested in the treatment of renal disease.

Endocrinology, Clinical Application and Treatment. By August A. Werner, Assistant Professor of Internal Medicine, St. Louis University. Ed. 2. 924 pages, illustrated with 327 engravings and a colored plate. Price, \$10.00. Philadelphia: Lea & Febiger, 1942.

The present edition represents a revision with the addition of 252 new pages. It is clearly written and covers not only the field of endocrinology but also many unrelated conditions—for example, vitiligo, scleroderma, mongolism, lipodystrophia, and similar rarities. There is no evidence that these disorders are endocrine in origin, and in the reviewer's opinion the space devoted to their consideration might have been devoted more profitably to some of the basic endocrinological principles, a knowledge of which is essential for understanding the clinical aspects of the subject. As is the case in most clinical texts dealing with endocrinology, much is taken for granted that is far from proved. For example, the statement (p. 819) that the obesity observed in hyperostosis frontalis interna "is usually of the pituitary type" and "indicates pituitary gland involvement" may be disputed. Many question the existence of a pituitary type of obesity and attribute this condition to hypothalamic disorder. It is the failure of clinical endocrinology to observe the highest standard of critical judgment that tends to confuse the general practitioner and leads to his misuse of this valuable branch of medical practice.

Diseases of Women. By H. S. Crossen and Robert J. Crossen. 948 pages, 1127 illustrations, 45 color plates. Price, \$12.50. St. Louis: The C. V. Mosby Company, 1941.

The ninth edition of Crossen's *Diseases of Women* presents the ideal reference and textbook. Previous editions of this work have long been used as a standard gynecological text and as a working volume for the general practitioner and the specialist.

This new volume contains all of the better features of previous editions and in addition brings the literature up to the very date of publication. The interesting physiology of ovulation as recently outlined by Strassman and the fine studies of Barthelmez and those of Markee on the physiology of menstruation are given in detail. The work of Rubinstein and Papanicolaou on vaginal smears and the diagnostic value of this procedure are also given full consideration. Routine and special gynecological examinations are described in a clear and concise manner with adequate illustrations.

The endocrines are reviewed, and sufficient space is devoted to the commercial preparations to enable the general practitioner to adapt them to his practice intelligently. Only the endocrine measures which have been proven sound are recommended. The causes of leukorrhea are carefully reviewed, and excellent practical suggestions on the diagnosis and treatment of this disorder are given. Less space is devoted to the microscopic pathology and to operative treatment than in the previous editions, and more space is given to diagnosis of gynecological conditions in general and to satisfactory office treatment. Dysmenorrhea, sterility, and functional bleeding are given ample consideration. The section devoted to the recognition and treatment of carcinoma of the cervix reflects the modern trend toward the use of irradiation therapy alone in this condition.

This volume is a big improvement over previous editions and is to be highly recommended.

Functional Neuroanatomy. By Wendell J. S. Krieg, Ph.D., Assistant Professor of Anatomy, College of Medicine, New York University. 553 pages, 274 illustrations. Price, \$6.50. Philadelphia: The Blakiston Company, 1942.

Krieg, in accord with the modern trend, presents the essentials of neuroanatomy from the functional aspect. Beginning with a survey of development and a review of the reflex mechanism, the author establishes an adequate background to discuss the various functional components of the nervous system.

Each chapter consists of a well coordinated unit which presents to the student not only the structure of that part of the nervous system immediately concerned, but also the associated gross anatomy, histology, and physiology, thereby enabling the student to correlate the knowledge obtained in the various preclinical courses.

Of particular interest are the illustrations, of which there are many (274 in addition to a 66 page atlas). Most of the illustrations are by the author and are unique in that they are so drawn as to enable one to perceive the third dimension. This type of illustration offers many advantages over the conventional two dimensional figure.

Although this book was written primarily as a textbook, it is to be recommended to anyone interested in the nervous system, because of its extensive consideration of the associated sciences.

Synopsis of Materia Medica, Toxicology, and Pharmacology. By Forrest Ramon Davison, B. A., M. Sc., Ph. D., M. B., Medical Department, The Upjohn Co., Kalamazoo, Mich.; Formerly Assistant Professor of Pharmacology in the School of Medicine, University of Arkansas, Little Rock. Ed. 2, illustrated. Price, \$5.75. St. Louis: C. V. Mosby Co., 1942.

As is indicated in the title, this is a synopsis of the essential information about the drugs used in clinical medicine. The book is well written, complete and up-to-date. Rational therapy is impossible without consideration of the pharmacodynamics of drug action, and ample space is devoted to this aspect of the subject.

Foundations of Neuropsychiatry. By Stanley Cobb, M. D., Bullard Professor of Neuropathology, Harvard Medical School, Psychiatrist in Chief, Massachusetts General Hospital. 231 pages, 12 figures. Price, \$2.50. Baltimore: The Williams and Wilkins Company, 1941

In the preface to this new edition of the book formerly known as "A Preface to Nervous Disease" the author states that the revisions consist largely in bringing up to date recent knowledge on the thalamus, the hypothalamus and the circulation of the brain and spinal cord, and the addition of a chapter on psychopathology. The word "Neuropsychiatry" in the title is somewhat misleading. Perhaps the chief value of this book lies in the integrated presentation of neurophysiological phenomena concerned with living. For the student who is concerned with the human being as a structural and functional unit, the way in which the author ties together various aspects of known living function is greatly enlightening. He also relates neuropathology to neurophysiology, thereby giving to neuropathology the dynamic treatment which it has lacked in many cases.

This book presents much of the recent material which has led neurologists to consider that the hypothalamus may be the originator of various affective states and therefore a prime intrinsic determinant of behavior. In the chapter on psychopathology, the author designed his own classification for nervous disorders. As the author states in the preface, there is no mention of what is perhaps the most important general consideration in psychiatry—treatment.

The purpose of the book can perhaps be given in the author's own words: "There are psychiatrists who state that neurology can contribute nothing to their field; there are psychoanalysts who are interested only in interpersonal relations and know nothing of the brain; there are neurophysiologists who deny psychology and consider psychoanalysis a racket. What is imperative at present is better training for everyone in all four fields and more tolerance." This treatise adheres to a rather simple mechanistic categorization of these related human phenomena, which should be of tremendous value to medical students. The thing which one misses (if this text would be a complete correlation of these related fields) is some consideration of the dynamics of development of human individuality as it comes from interpersonal relations. Probably this book will be of greatest value to medical students, who need real assistance in the integration of neuroanatomy and neurophysiology with what one sees clinically in neurologic and psychiatric syndromes.

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RECENT ADVANCES IN CARDIOVASCULAR DIAGNOSIS AND TREATMENT

PAUL D. WHITE, M. D.
BOSTON, MASSACHUSETTS

I take great pleasure today in bringing the wartime greetings of the medical profession of Massachusetts and of New England to the medical profession of North Carolina at this, your annual meeting, and, in particular, the greetings of the Massachusetts General Hospital to Charlotte. On an early spring day twenty-four years ago in a little village in southwestern France during another war a small but sturdy group of thirteen officers, twenty-one nurses, and forty-five enlisted men of Unit O from Dixie joined for the duration U. S. Base Hospital No. 6, composed of Yankees. During that next year there were cemented close friendships which have ripened with the years that have passed. My visit to you today is in large part the result of that chance occurrence in March, 1918.

And now for the particular subject of the day—"Recent Advances in Cardiovascular Diagnosis and Treatment".

"Yet, even since the times of Corvisart and Laennec there has been a great advance in our knowledge of cardiac and arterial disease; and, in proof of this assertion, it is only necessary to refer to the many works of a formal nature, and again to the numerous and equally valuable class of monographs which have been produced on these subjects during the last few years." These words sound very modern, but they were actually written by William Stokes in 1854⁽¹⁾.

Read before the Second General Session, Medical Society of the State of North Carolina, Charlotte, May 13, 1942.

1. Stokes, William: *The Diseases of the Heart and Aorta*, Dublin, Hodges and Smith, 1854.

One hundred years before that, Senac in his *TRAITE DE LA STRUCTURE DU COEUR, DE SON ACTION, ET DE SES MALADIES*⁽²⁾, wrote: "The brain is not sufficiently large and life is too short to embrace all anatomy. In spite of all the help which our predecessors have given to us, it is hardly possible for a man to develop with exactness knowledge of a single organ. Those long works which mention the details of each part of the body proclaim their own sterility even by their extent. They are like geographic maps of the entire world. The kingdoms appear only as dots."

And Latham in 1845⁽³⁾ wrote: "The study of our times has been chiefly to specialise and to localise disease, and it has had very useful results. But it has had a tendency to narrow our views, and to cripple our practice, by setting up as many several pathologies within the body as there are several organs. Yet no sooner do the diseases of separate parts come to be treated, than they begin to claim their place in a common pathology."

The increase in our knowledge of cardiovascular disease had a very slow beginning several hundred years ago, getting off to a fairly good start at last in the years just before and just after 1700, and building up gradually through the eighteenth and nineteenth centuries until it received its present impetus a generation ago through the stimulus of such men as Mackenzie and Wenckebach and their many pupils. Since the first

2. Senac: *Traite de la Structure du Coeur, de son Action, et de ses Maladies*, Paris, Briasson, 1749.

3. Latham: *Lectures on Subjects Connected with Clinical Medicine, Comprising Diseases of the Heart*, London, Longman, Brown, Green, and Longmans, 1845.

World War the pace has been fast, and much has been learned in the last two decades, largely because of the concentration in this field by many workers all over the world. It is a pity that there must be some pause in this important work now in the present world conflict, but it is first essential to free the world from the menace of such very interruptions as this.

I shall discuss briefly this afternoon recent progress in diagnosis, present a few diagnostic clues that have become clarified in the last decade or two, and close with some remarks about treatment.

Cardiovascular Diagnosis

First and foremost should be mentioned what I believe to be the most important problem of all, but the one which has been the most neglected and which is only now exciting our attention—namely, *the range of the normal heart*. Like other organs and systems in the body, the heart and circulation in disease have always interested the doctor more than the heart and circulation in health, and the physiologist, though he has analyzed the various functions and activities of the cardiovascular apparatus, has not taught us the normal range. Gradually, in the last few years especially, it has dawned upon us that the range of the normal heart in man is exceedingly wide, in its size and shape, rate and rhythm, force and endurance, and in its blood pressure, x-ray shadow, and electrocardiogram. We do not know as yet the bounds of the normal heart, but we have learned that a good many findings which were once considered evidence of disease are actually normal enough for the particular type of human individual concerned. This knowledge is of the greatest importance, not only in avoiding the label of disease when there is none, but also in allowing these normal individuals to be accepted for various activities, such as military service, a vital need of the moment. For continuation of this study, better correlation with body build and constitution is needed than our present knowledge will permit. For example, the best measurements of heart size at present available—namely, the Hodges Eyster nomograms for the predicted normal size of the area and transverse diameter of the x-ray heart shadow—allow too great a range of variation (from plus 10 per cent to minus 10 per cent) to be of any great value; the hearts whose size is

clinically questionable remain for the most part questionable even after careful and elaborate mensuration. Startling discoveries have been made of the range of the normal electrocardiogram, as in Graybiel's series of records from 1,000 healthy aviators.

Next in importance comes the *incidence of heart disease and of its types* throughout the world. A few statistical data of some interest have been collected of late in this country, but that is but a small beginning. A wealth of information of great value awaits us. We cannot experiment adequately on man, nor can we translate to man animal experiments in this field with any degree of certainty; but nature has been carrying on human experiments, some simple, others complicated, in all parts of every continent and over the seven seas. How do climate, food, physical activities, racial stock, habits, and disease affect the heart and circulation in various different communities the world over? We should get at this problem when the war is finished.

Now let me take up the different kinds of heart and blood vessel diseases, beginning at birth. More advance has been made in the recognition of *congenital defects* than in any other type of cardiovascular disorder in the last decade or more. Prognosis, and now even treatment since the introduction of ligation of the patent ductus arteriosus, depend largely on the particular structural lesion present. We have come to recognize certain defects which were scarcely mentioned in my medical school days: a few of these are coarctation of the aorta, auricular septal defect, the tetralogy of Fallot, and the right aortic arch.

Rheumatic heart disease has become more clearly understood, although its exact pathogenesis is still unknown. We now appreciate its dependence on infection by the hemolytic streptococcus, and thereby its climatic variation, the common acute or subacute myocardial involvement with not infrequent reversible dilatation of both ventricles, the good prognosis and extended longevity in many cases, and its decrease with improvement in living conditions in any community.

Hypertensive heart disease is better understood, consisting as it does of left ventricular enlargement from the strain of systemic hypertension of any sort—most commonly, of course, from the so-called essential hypertension, still a mystery on the eve of solution. I should like to emphasize,

however, that in many persons the blood pressure never stays high enough long enough to cause any heart disease. Hypertension is not synonymous with hypertensive heart disease.

There is another type of hypertensive heart disease, generally acute, that has been largely explained in the past decade—namely the *cor pulmonale*. Increase of pulmonary blood pressure, if extreme, can cause dilatation and even failure of the right ventricle. In acute form it may arise from massive pulmonary embolism, and has been labeled the *acute cor pulmonale*. This can give rise to a characteristic electrocardiographic pattern; it is to be noted, however, that in at least 90 per cent of the cases pulmonary embolism is too slight or is too rapidly fatal (by vascular shock) to produce the clinical and electrocardiographic picture of the acute *cor pulmonale*. The acute dilatation can go on to a chronic state, which, however, in high degree is rare and then is best recognized electrocardiographically. Lesser and unimportant *cor pulmonale* occasionally may occur from pulmonary fibrosis due to serious chronic pulmonary infection or silicosis, but failure of the chronic *cor pulmonale* is extremely uncommon.

Here for a moment I should like to digress to speak of that very important vascular accident, *pulmonary embolism*, which frequently causes death by shock and occasionally affects the right ventricle, as I have just said. This condition is common medically as well as surgically, but in medical cases has been largely overlooked in the past and still is recorded as rare in many places, being called pneumonia, pleurisy, lung congestion from heart failure, or even coronary thrombosis. It is to be noted that recurrent pulmonary embolism is especially common in cardiac patients, particularly in those in congestive failure, in whom it is actually the most common cause of death. There are three reasons for the failure to recognize it clinically more often: (1) it is not thought of, (2) it is often concealed by the signs of congestive failure, and (3) it does not usually give rise to the old text book picture with blood spitting. An otherwise unexplained episode of chest discomfort, of acute breathlessness or pulmonary edema, of tachycardia, cyanosis, fever, or leukocytosis, alone or in various combinations, should make one think of the possibility of pulmonary embolism, especially if it is repeated in a cardiac patient

or in a person who has sprained an ankle or had some other leg injury. Pleural pain or friction rub, blood spitting, x-ray evidence, or the acute *cor pulmonale* electrocardiogram are, of course, if present, very helpful in confirmation. But the most important point in making the diagnosis of pulmonary embolism early is to search for what is almost invariably the fundamental cause and to correct it, thereby occasionally saving a life. Infrequently is the heart the source of the embolus. It is usually one of the long leg veins that is at fault, even though careful examination may not reveal it. Frequently by the time the leg swells or is painful or tender the danger is over and the other leg may then be the focal hazard. Therefore, if in doubt one should obtain a *venogram* of each leg—that is, an x-ray picture of the deep and superficial veins by diodrast injection. Careful technique and experienced interpretation are essential, but when it is clearly evident that the long veins are affected, their ligation should be carried out at once.

Let us turn now to one of the most fascinating forward steps of all—namely the appraisal of *coronary heart disease*: angina pectoris and coronary thrombosis. Once upon a time, not much more than ten years ago, these conditions were viewed with great pessimism. It was thought that chronic invalidism and sudden death in the not far distant future were the natural results. Clinical and autopsy experience, and certain researches, especially those of Schlesinger and Blumgart, have radically changed our viewpoint. Now we realize that only about 10 per cent of patients with coronary heart disease come to grief quickly; that a great many patients live for a good many years only slightly or occasionally bothered by coronary insufficiency; and that an appreciable number, probably 10 per cent or more, recover completely to resume a normal life and are likely to die in old age of something other than heart disease. This advance has come through the careful follow-up study, with autopsy, of many individual patients, the widespread introduction of electrocardiography, and the demonstration of the frequency with which adequate collateral coronary circulation is established in affected hearts. A corollary is that coronary disease is not synonymous with coronary heart disease; indeed one or more of the main coronary arterial trunks may be completely

occluded (by a slow process) with never any symptoms of myocardial injury. Undoubtedly the large increase in cases diagnosed as coronary heart disease is due in great part to recognition in our times of the lesser degrees of the disease.

Acute and chronic constrictive pericarditis has also come into prominence in the last dozen years or so. The clinical recognition of the acute cases presenting tamponade by effusion or hemorrhage was made occasionally in former days, but is now common. Proof is furnished by increase in the bulk of the heart and pericardial sac, plus small arterial pulse pressure, paradoxical pulse, and increased systemic venous pressure (engorged neck veins and liver). Paracentesis or operation can save such patients. The chronically constricted heart likewise shows a low arterial pulse pressure with engorged neck veins and liver, but there are also findings of ascites, a heart of normal size or only slightly enlarged, often no murmurs, but a loud third sound, always an abnormal electrocardiogram (flat or inverted T waves and often low voltage of the QRS waves), and sometimes calcification of the pericardium demonstrated by x-ray. Recognition of this condition is vital, since cure is possible in about half the cases by operation, consisting of pericardial resection.

Two aortic diseases in particular I should like to mention, also newly recognized clinically in recent years. These are dissection of the wall—the so-called *dissecting aortic aneurysm*—, and *arteriosclerotic aneurysm*, both in contrast to the usual *luetic aneurysm*. A hypertensive patient may suffer a sudden excruciating pain in the thorax, radiating down the back, which is due to the splitting of the aortic wall; the differentiation of this vascular accident from coronary thrombosis is important largely because of its serious prognosis (90 per cent or more fatality). That old persons can die of rupture of *arteriosclerotic aortic aneurysms*, usually abdominal but sometimes thoracic, should be clearly recognized; to call all aortic aneurysms *luetic* is to do two possible wrongs: first, to attach to the patient a stigma that is unjustified, and second, to subject him or her to quite unnecessary and sometimes harmful anti-*luetic* therapy.

Finally, there have been recognized in recent years a wide variety of *rare cardiovascular diseases* important only because they should be thought of in obscure or

doubtful cases. They include such conditions as Fiedler's myocarditis, sarcoid disease, amyloid disease, glycogen storage (von Gierke's) disease, disseminated lupus, periarteritis nodosa, avitaminosis, and cardiac enlargement and failure due to paroxysmal tachycardia at excessive heart rates. Altogether these conditions comprise less than 1 per cent of all cardiac cases.

Before turning to certain diagnostic clues I would add a few words about advances in *differential diagnosis* and in the use of roentgenology, electrocardiography, and other methods of study. We have learned to distinguish more clearly than we once did between *cardiac* and *gastrointestinal symptoms*, and more particularly between angina pectoris and cardiospasm or esophageal spasm (often due to hiatus hernia); and between coronary thrombosis or myocardial infarction and gallbladder disease. Perhaps the most important lesson that we have learned in this relationship or differentiation is that cardiac and gastrointestinal conditions can and frequently do occur together. We are also now on the watch to distinguish between *acute myocardial infarction* and *pulmonary embolism* and between *acute myocardial infarction* and *acute pleuro-pericarditis*. We must not confuse the electrocardiograms of *coronary heart disease* and *myxedema*. We must differentiate between *left ventricular failure* and *pulmonary emphysema* or *infarction* and between *right ventricular failure* and *constrictive pericarditis* or *local venous stasis*.

Roentgenology has made possible great strides in cardiovascular diagnosis, particularly in demonstrating the characteristic heart shapes of certain congenital defects, the size and extent of pulsation of the pulmonary blood vessels and of the aorta, the size of the left auricle, and calcification of the pericardium, valves and coronaries; but it has serious limitations, as I have already pointed out, in not demonstrating clearly slight cardiac enlargement when it is most important to recognize it, and in occasionally showing a normal heart shadow when other clear evidence of heart disease is present. However, with full recognition of its limitations, we should employ roentgenology, especially fluoroscopy, in checking our histories and physical examination. One of the important errors in interpretation still current is the inclusion of the triangle of pericardial-diaphragmatic fat as a part

of the heart shadow, thereby causing a false diagnosis of cardiac enlargement to be made. The use of diodrast delineation of the great vessels and heart chambers in expert hands has been a great step forward in the solution of obscure diagnostic problems, as has been also the outline of the peripheral vessels in appropriate cases, especially the venograms in suspected instances of phlebothrombosis. Kymography, tomography or laminagraphy, and cinematography have yielded less valuable information.

Electrocardiography has proved of greater value than roentgenology of the heart in cardiac diagnosis, but it too must be evaluated with special care. Heart disease is at present overdiagnosed as the result of its use. It is of most value in revealing or confirming coronary heart disease and preponderant enlargement of one or the other ventricle, in elucidating arrhythmias, and in helping to solve obscure cases. The chief advance in recent years in electrocardiography besides the realization of the wide range of the normal has been in the application of the chest or precordial leads. Our knowledge of these leads is still in a state of flux, but their chief value is in revealing and localizing myocardial disease of any type, but especially that due to coronary disease since that is the most common. It is now evident that chest leads are not necessary in the majority of cases; that when they are used, multiple leads are wisest, especially from lead points C_1 , C_3 , and C_5 ; and that accuracy in technique and interpretation are essential, for otherwise they do more harm than good. A progress report will shortly be published on this difficult subject by the Precordial Lead Committee of the American Heart Association.

Other laboratory tests, such as those of circulation rate, venous pressure, and blood gas content, are relatively unimportant for routine use although they have been helpful in research to elucidate certain circulatory problems and are useful in rare problem cases.

Diagnostic Clues

The most important advances in diagnosis have really been in the better recognition and the more intensive and widespread utilization of the clinical significance of simple symptoms and signs, findings that require the use merely—though to be sure the skilled use—of eyes and ears, fingers and brain. I

would like to mention now some examples of such helpful diagnostic clues that have become better appreciated in recent years.

A. Pain.

1. *The angina pectoris of coronary insufficiency.* Of prime importance is the circumstance of its occurrence. Of less importance, but nevertheless very helpful, are its character (a tightness, waxing and continuous, though brief), its short duration, its location (substernal as a rule), and its quick relief by nitroglycerine. It is rare in women under 50 but common in men after 40.

2. *Prolonged heart pain aggravated by deep inspiration* means acute pleuropericarditis.

3. *Abrupt excruciating pain radiating down the back* suggests a dissecting aortic aneurysm.

4. *Tenderness accompanying heart pain* minimizes its importance.

5. *Tachycardia may cause pain* due to coronary insufficiency or to nervous discomfort.

6. *Right upper quadrant pain on effort* (due to liver congestion) in mitral stenosis or in other strain on the right ventricle is the first symptom of right ventricular failure.

7. *Substernal discomfort* when the patient is seated or recumbent and not on effort is not due to coronary insufficiency; it is most likely of gastric origin due to cardiospasm, quite commonly from a hiatus hernia.

B. Dyspnea.

1. *It is non-cardiac if the heart is normal in size.* It is most commonly of pulmonary origin or asthmatic.

2. *Sighing respiration* is a nervous, not a cardiac symptom.

3. *Cheyne-Stokes respiration* when the subject is awake is a serious sign of circulatory failure.

4. *Paroxysmal dyspnea* in a case of left ventricular strain is serious, but not as serious in mitral stenosis. In the former it is evidence of myocardial failure; in the latter it is merely a mechanical fault.

5. *Recurrent dyspnea with tachycardia and fever* with or without heart failure suggests pulmonary embolism.

C. Palpitation.

1. *Per se this is unimportant* if there is no other evidence of heart trouble, though it is often disagreeable. It includes not only extrasystoles and paroxysmal tachycardia,

but also *auricular fibrillation and flutter*.

2. *Tachycardia*, no matter what the rhythm, may precipitate coronary insufficiency, myocardial insufficiency, or psychoneurosis.

3. *Difficulty in controlling heart rate*, especially in auricular fibrillation, by rest and digitalis, means either nervousness, thyrotoxicosis, infection, or infarction (especially pulmonary).

Signs.

A. *Cyanosis*. This is more often pulmonary than cardiac in origin, even in a heart failure patient. It must be distinguished from argyria and polycythemia.

B. *Jaundice* in congestive failure suggests a large pulmonary infarct.

C. A *big heart* is evidence of chronic heart disease as a rule, but there is such a thing as reversible acute dilatation, especially in acute rheumatic myocardial involvement, acute cor pulmonale, and very severe paroxysmal tachycardia (in infants especially).

D. *Heart sounds*. Pulmonary second sound markedly accentuated in hypertension is important evidence of left ventricular failure, and in congenital heart disease of an auricular septal defect. Gallop rhythm at the apex and lower end of the sternum is usually a sign of serious ventricular dilatation (left and right respectively).

E. *Murmurs*. A harsh systolic murmur at the apex, heard also at the aortic area but not in the lung bases, usually means aortic stenosis; more blowing in character and heard also at lung bases but not in the aortic area, it means mitral regurgitation. In the interpretation of a continuous murmur a venous hum in or transmitted from the neck must be ruled out. Delicate aortic and mitral diastolic murmurs vary in audibility with body position, stethoscopic chest piece, and exercise.

F. *Pulse*. Great difference in volume of wrist pulses suggests aneurysm. Well marked pulsus paradoxus favors acute or chronic constrictive pericarditis. One must exclude compression of subclavian arteries on raising shoulders in deep inspiration. True pulsus alternans means serious left ventricular weakness, except in cases of excessive paroxysmal tachycardia. Absence of pulse in the feet points most often to local occlusive arterial (especially Buerger's) disease, but in rare cases to arterial embolism.

dissecting aortic aneurysm, or coarctation of the aorta. Do not confuse the deep systolic jugular pulse with the carotid pulse.

G. A *systolic thrill palpable over the aortic valve area* almost always means aortic stenosis, rarely aneurysm; a *systolic thrill at the left border of the sternum* means as a rule a congenital ventricular septal defect.

H. *Left vs. right hydrothorax in heart disease*. The former, if isolated or preponderant, is more often due to pulmonary infarction or pleurisy than to congestive heart failure. Polyserositis must be distinguished from dropsy.

I. The same statement applies to the finding of *rales at the lung bases*—that is, pulmonary infection or infarction, or even atelectasis, is the commoner cause.

J. *Exclusive or preponderant unilateral leg edema* means local trouble, even in heart failure, provided the effect of gravity (lying on one side) is ruled out. Often this sign is due to phlebothrombosis, which may lead to pulmonary embolism.

K. *Engorged neck veins* almost always mean right heart failure, rarely acute or chronic constrictive pericarditis or pressure from a tumor; they always indicate the presence of a big liver too.

L. A *big liver without increased neck veins* (and venous pressure) means a non-cardiac cause (cirrhosis - early stage -, hepatitis, tumor, etc.); the liver edge is unreliable as an indication of the size of the liver.

Treatment

"Many think that the expectation of effecting an improvement in the treatment of diseases of the heart, is chimerical; and they think so because, not being accustomed to recognize the diseases in question before they have attained an advanced stage, they are pre-occupied with the old and popular idea of their incurability. To such it might, perhaps, be a sufficiently philosophical answer to reply, that an improved knowledge of the nature and causes of a disease, must alone necessarily lead to an improvement in the treatment; and that therapeutic weapons are dangerous when wielded in the dark. But here we may go much farther: we may say that, by the improved means of diagnosis, the maladies under consideration may be recognized, not only in their advanced, but in their incipient stages, and

even when so slight as to constitute little more than a tendency . . .

"Thus it is seen that the practical improvements to be derived from a better knowledge of the diseases of the heart, extend, not to the diseases of this organ alone, but to a multitude of the most formidable maladies incident to the human frame. There is, in short, scarcely an affection with which disease of the heart may not be more or less interwoven; and, 'if,' to use the language of Senac, 'we would not pronounce rashly on an infinity of cases; if we would not harass our patients by noxious and unavailing remedies; if we would not accelerate death by treating certain diseases like others which are entirely different; nor be exposed to the disgrace of seeing our diagnosis falsified by the results of dissection; finally, if we would not have danger to be imminent, whilst we are under the blind impression that it is remote, we must study the diseases of the heart.'"

So said Hope one hundred and ten years ago⁽⁴⁾.

There are a few particular points about the evaluation of the treatment of heart disease that I shall emphasize now in closing. In the first place, I cannot too strongly reiterate that there is a natural tendency for recovery in three particular cardiac conditions—namely, acute rheumatic heart disease, acute coronary heart disease, and congestive failure set off by tachycardia, pulmonary embolism, or infection. No matter what we do, patients with these conditions are likely to recover, but, of course, rest and specific measures are helpful. By specific measures, I refer to sedatives and narcotics when necessary, oxygen, digitalis, and diuretics. Too much credit has been given to various drugs and surgical measures for recovery from these conditions, when recovery would have occurred anyway. I do not want to be regarded as a therapeutic nihilist, but twenty-five years of experience with these particular cardiovascular troubles have convinced me of the truth of the remarks that I have just made.

In the next place, I need hardly mention what has been a great advance in the last decade or two in cardiovascular therapy—namely, the introduction of the mercurial and other diuretics to supplement the effect of digitalis in congestive heart failure. At

first there was a good deal of fear that the mercurials might have a harmful effect on the kidneys, but it is astonishing how rare has been any such harmful effect; without doubt many lives have been prolonged and made much more comfortable by the free use of diuretics when needed.

Chemotherapy in subacute bacterial endocarditis, particularly the use of the sulfonamides and especially sulfapyridine, has improved the formerly hopeless outlook in this dread disease. In a review by Kelson and myself⁽⁵⁾ of 250 well authenticated cases of subacute bacterial endocarditis studied in the Boston hospitals between 1927 and 1939, there was only one recovery, and that was for but a year. Since 1939, the mortality has been reduced, at least in our experience, so that now between 5 and 10 per cent of the patients recover. This is not a great reduction but it is well worth while. Whether or not heparin and other measures such as hyperthermia are important adjuncts remains for the future to decide. Heparin has the best rating so far and is not as dangerous as many have thought it to be.

Surgery has been responsible for definite advances in cardiovascular therapy, the most striking of which has been the cure of some 50 per cent of patients with chronic constrictive pericarditis by pericardial resection in the hands of expert and experienced surgeons. As I have stated earlier, it is vital to recognize clinically this uncommon but important condition. A further advance of great interest and also of value was made by Gross of Boston, who has ligated the patent ductus arteriosus in young people when there is definite evidence of important strain on the heart by this congenital defect. Another surgical measure which I have already spoken of but which I cannot emphasize enough is the ligation of thrombosed leg veins responsible for recurrent attacks of pulmonary embolism, any one of which can be fatal. Splanchnic resection in hypertension has been at times disappointing, but there is a small group of patients that have been spectacularly relieved. General treatment of hypertension remains inadequate, however, and we are looking forward hopefully to the day when there may be a specific extract or drug that can take care of hypertension and thereby ward off the serious

4. Hope: *A Treatise on the Diseases of the Heart and Great Vessels, Comprising a New View of the Physiology of the Heart's Action*, London, William Kidd, 1832.

5. Kelson, S., and White, P. D.: *An Analysis of Two Hundred and Fifty Cases of Subacute Bacterial Endocarditis*, To be published.

effects of chronic severe hypertension on the heart, arteries, and kidneys.

Preventive measures have already had spectacular success in two cardiovascular conditions that used to be serious. One is luetic aortitis, which now by the prevention or early and adequate treatment of syphilis has become rare in the most progressive communities. The other condition which we used to see a generation ago—namely, thyrotoxic heart disease—is now in advanced communities almost unknown. Further preventive medicine can be practiced in cutting down various factors of strain in the presence of organic heart disease. Too little attention has been paid to this matter, and yet it remains one of the most important reasons why the early diagnosis of heart disease is worth while long before heart failure comes.

Finally, I want to emphasize the value of reasoned optimism in treatment. One can thereby often avoid cardiac neurosis, whether there is any heart disease or not.

Summary

History has shown that the whole world—not just one school or city or country—has made steady advance in our knowledge of cardiovascular disease. It is quite certain that such advances will again be made universally. For the time being, however, it is of prime importance to finish this present world war, so that we may avoid in the future such interruptions of scientific advance as have resulted both from the present war and from the first World War. In ending, I would once more quote from the preface of Senac's *TREATISE ON THE HEART*²¹, written two hundred years ago: "I have tried to avoid that prejudice of nationalism which dominates even the scientist. Several imagine that genius and knowledge are attached to their countries alone and that other nations are condemned by nature to sterility. This vanity may perhaps be useful to certain states; in inspiring confidence and scorn it inspires courage or ferocity but it degrades the mind. Genius is the prerogative of no nation. It is sown by chance amidst stupidity and ignorance. Let men who have the spark in common be separated by the seas or by long stretches of land and yet they form a spiritual republic.

"It is not sufficient to study the works of so many writers who have examined the heart. I have consulted this machine itself

in order to discover that which has escaped them. I had thought at first that one could add nothing to their researches but one knows only gross facts about this organ and even these are not accurately described. To develop them I have searched in its very tissue. Such is the fertility of nature that it presents, to all, objects which one does not seek and findings that one has not foreseen."

THE STRUCTURAL BASIS OF PSYCHIATRY

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It is possible that the mere title of my paper will, in these days of emphasis on the psychogenic, arouse passive resistance in some of my listeners. Moreover, the lack of proof available for some of its concepts may arouse more active resistance. It seems desirable nevertheless to attempt to assess some of the structural background against which psychodynamic mechanisms operate, and to indicate some of the structural damage which may follow too enthusiastic application of some of our newer methods of treatment. An attempted assessment of structural mechanisms in psychiatry may be of value, if only to emphasize the fact that the brain still remains the organ of mind.

Organic Versus Psychogenic

Before proceeding to a consideration of the main problems of my discussion, let me first direct attention to the "either/or" concept which has dominated psychiatry for too long. I refer of course to the fact that processes in the psychiatric field are regarded as either structural, usually referred to as organic, or psychogenic, erroneously spoken of as functional. The schism, I presume, has been fostered by the rise of purely psychogenic concepts in psychiatry and by the meager contributions of the purely structural fields to an understanding of psychogenic mechanisms. Despite the description of the brain changes in psychiatric disease—for example, in general paresis, alcoholism, and trauma—, neurology has failed to clarify the purely non-structural or intangible aspects of psychoses or neuroses. The

²¹From the Department of Neurology, Jefferson Medical College.
Read before the North Carolina Neurologic and Psychiatric Association, Charlotte, March 27, 1942.

disorders of emotion and mind, the personality problems all remain unsolved. Structural damage in itself can explain little unless there is correlation between damage and response. The concept has developed therefore that structural neurology has nothing to offer in the understanding of the emotions, of human motivations, or of personality disorders, and it has become customary to speak of the structural or organic as something wholly apart from the purely psychogenic. That this concept has proven unsatisfactory to most psychiatrists is attested by the recent healthy revival of psychosomatic medicine, which represents merely a rebirth of the unitary concept of body and mind.

The controversy between the structural and psychogenic approaches is an old one, and usually appears in the guise of identity or separation of body and mind. I have no desire to discuss this purely metaphysical aspect of psychiatry, and indeed am not qualified to do so. But I regard it as vital to the interests of psychiatry to analyze the separate contributions of both the structural and the psychogenic approaches and to discover how both work in unison. For it seems to be indubitable that the one is dependent on the other, and that without a brain or spinal cord all our psychogenic mechanisms have little meaning. If it cannot be shown conclusively how the brain integrates impressions to produce experience, it can at least be demonstrated that decortication eradicates much that is essential in human living.

Structural Basis of the Emotions

It is important to know how the emotions operate in the physical mechanism, and in recent years much work has been done on this problem. Most of our attention has been focused on the hypothalamus, which appears to assume great significance in the problem of the emotions. It must not be forgotten, however, that other brain regions are also involved in the problem.

There are two main approaches to the structural background of the emotions. One has to do with emotional expression; the other with that less tangible feature, the affective aspect of emotions. Let us consider first the problem of emotional expression.

Expression of the Emotions. I shall direct attention first to the hypothalamic region, not because it alone is concerned in the prob-

lem, but because there is good reason to believe that it serves as a focal point for impulses received from other parts of the nervous system, and hence assumes unusual importance. That other parts of the brain are also essential is undoubtedly true, as will appear later.

1. *Role of the Hypothalamus.* Removal of the brain above the hypothalamus results in what has been described as "sham rage", a term coined in order to indicate that the rage reaction elicited in animals so treated is not associated with the affective disturbance itself, but only with the expression of rage reactions. The rage so evoked is undirected, never outlasts the stimulus, and responds variably, being elicited with ease in some cases, and with difficulty in others. It is characterized in experimental cats by such actions as lashing of the tail, arching of the trunk, thrusting and jerking of the limbs fastened to the animal board, protrusion of the claws and clawing movements, snarling, attempts to bite, panting, and movements of the tongue to and fro, and is associated with signs of sympathetic activity such as erection of the tail hairs, sweating, dilatation of the pupil, tachycardia and elevation of the blood pressure, and secretion of adrenin.

Indications that some lower center is involved in these fits of sham rage was first given by observations on decorticate dogs and cats. Such animals were found to develop rage reactions, as shown by the observations of Goltz⁽¹⁾, Rothmann⁽²⁾, Schaltenbrand and Cobb⁽³⁾, and Dusser de Barenne⁽⁴⁾. It seemed from these experiments that removal of the cortex permitted free play to some other area normally held in check by the cortex. Since the reaction could not be elicited in the decerebrate animal with mesencephalic section, areas at a higher level were sought. In a series of experiments Bard⁽⁵⁾ demonstrated that "the discharge of nervous impulses which evokes this extraordinary motor activity . . . is conditioned

1. Goltz, F.: Der Hund ohne Grosshirn, Pflüger's Arch. f. d. ges. Physiol. 51:370-614, 1892.

2. Rothmann H.: Zusammenfassender Bericht ueber den Rothmannschen grosshirnlosen Hund nach klinischer und anatomischer Untersuchungen, Ztschr. f. d. ges. Neurol. u. Psychiat. 87:247-313, 1923.

3. Schaltenbrand, G. and Cobb, S.: Clinical and Anatomical Studies on Two Cats Without Neocortex, Brain, 53:449-488 (Jan.) 1931.

4. Dusser de Barenne, J. G.: Recherches experimentales sur les fonctions du systeme nerveux central, faites en particulier sur deux chats dont le neopallium a ete enleve, Arch. neerl. Physiol. 4:31-123, 1920.

5. Bard, P.: A Diencephalic Mechanism for the Expression of Rage With Special Reference to the Sympathetic Nervous System, Am. J. Physiol 84:490-515 (April) 1928.

by central mechanisms which lie within an area comprising the caudal half of the hypothalamus and the most ventral and most caudal fractions of the corresponding segment of the thalamus Anatomical considerations make it improbable that the small remnants of certain thalamic nuclei left in some of the active animals were of any functional significance. Consequently it may be stated with assurance that the sham rage depends on the caudal hypothalamus." Moreover, Kessler⁶ has shown that when the hypothalamus is not functioning there can be no spontaneous emotional display and stupor supervenes, while partial lesions of the hypothalamus or ventral portion of the thalamus seem to produce an unusual lability of emotional display.

The data accumulated by ablation experiments have been confirmed in stimulation experiments of the hypothalamic region. Electrical stimulation of the hypothalamus of cats by Ranson⁷ and his co-workers elicited sham rage responses. "At the onset of stimulation the animal became alert, raising its head and opening its eyes, disclosing dilated pupils. The respiration increased in rate and depth, and the animal soon began to struggle, clawing, biting, and trying to free itself from the hammock in which it was restrained. If the stimulus was continued the hair on the back and tail began to bristle, sweat appeared on the pads of the feet, and saliva ran from the mouth In all these respects the cats behaved as they would had they been threatened by a barking dog. The reactions were specifically hypothalamic in origin. Except when very strong stimuli were used, which spread to the hypothalamus, similar reactions could not be elicited from surrounding parts of the brain such as the thalamus, internal capsules, septum, and infundibular stalk." Ranson asserts further that "the hypothalamus is the centre for the integration of the visceral and somatic components of emotional expression. When it is removed, a fully developed emotional response is no longer possible and when it is stimulated electrically it can be made to call forth a typical rage reaction."

Hypothalamic stimulation of the *intact* animal elicits retraction of the ears, growling, raising of the back and lashing of the

tail and the development of hyperpnea, salivation, mydriasis, piloerection, biting, striking movements with claws unsheathed, and finally precipitate running (Massermann). These reactions have been shown by Massermann to be poorly directed, diffuse, and stereotyped, and to last only as long as the stimulus is applied. Stimulation of the left mammillary body in lightly narcotized cats likewise has produced typical sham rage⁸.

Support of these observations has been found in clinical experience. Irritation or stimulation of the hypothalamus by removal of tumors in this region has resulted in outbursts of uncontrollable emotional responses. Manic-like excitements with euphoria, motor restlessness, excitement, push of speech, and flight of ideas have been observed by Foerster⁹ in operations on suprasellar tumors during the removal of which the hypothalamus was stimulated. Similar reactions have been observed by Fulton and Bailey¹⁰. In a 13 year old child operated on for glioma of the optic chiasm invading the third ventricle Cushing¹¹ found that he could produce tremendous hyperactivity and blind excitement by stimulation of the hypothalamus. Fits of meaningless and uncontrollable laughter have been recorded¹² in a patient with a tumor restricted to the region of the mammillary bodies, and loss of inhibitory control over the emotions has been found in an elderly male suffering from an adenomatous cyst. This patient made advances and ribald remarks to the nurses, all of which ceased after removal of the tumor.

There have been a few instances in which not only emotional excitement but personality deviations occurred. I do not wish to imply that here in the hypothalamus lies the master personality switch, but in the instances to be cited there occurred a combination of emotional and personality deviations for which there was no other cause found.

A case of personality disorder has been reported in a man of 39, who at necropsy was found to have a teratoma of the third

5. Gellhorn, E.; Cortell, R.; Feldman, J.: *The Autonomic Basis of Emotion*, Science 92:288-289 (Sept. 27) 1940.
6. Kessler, M. M.: Spontaneous and Reflex Emotional Responses Differentiated by Lesions in Diencephalon, *Proc. Soc. Exper. Biol. & Med.* 47:225-227 (June) 1941.
7. Ranson, S. W.: Some Functions of the Hypothalamus, Harvey Lecture, *Bull. New York Acad. Med.* 13:241-271 (May) 1937.
8. Gellhorn, E.; Cortell, R.; Feldman, J.: *The Autonomic Basis of Emotion*, Science 92:288-289 (Sept. 27) 1940.
9. Foerster, O. and Gagel, O.: A Case of Ependymal Cyst of the Third Ventricle (A Contribution to the Question of the Relation of Mental Disturbances to the Brain Stem), *Ztschr. f. d. ges. Neurol. u. Psychiat.* 149:312-344, 1935.
10. Fulton, J. F. and Bailey, P.: Tumors in the Region of the Third Ventricle, *J. Nerv. & Ment. Dis.* 69:1-25 (Jan.); 115-164 (Feb.); and 261-277 (March) 1919.
11. Cushing, H.: The Pituitary Body and Hypothalamus, Springfield, Ill., C. C. Thomas, 1929.
12. Dott, Norman M.: In the Hypothalamus, London, Oliver and Boyd, 1938, p. 212.

ventricle destroying the hypothalamus⁽¹³⁾. About a year before signs of tumor developed he became irritable, hypersensitive, aggressive, argumentative, curt, stubborn, and unreasonable, all in contrast to his normal personality make-up. He had periods of great excitement and frequently flew into a rage over trivial matters. At other times quiet periods alternated with periods of excitement. His business judgment became impaired, he became indifferent to and careless of his professional responsibilities, and he exhibited a severe memory loss. In other ways he showed evidence of a loss of normal control over himself. The change in mood, intellect, and personality structure was so striking that he was thought to have general paresis. The teratoma found at autopsy extended from the region of the anterior commissure to the middle position of the mesencephalon. The thalamus, particularly the anterior and medial groups of nuclei, was compressed but not destroyed. In the hypothalamus the substantia grisea was completely destroyed; the nucleus supraopticus was severely damaged; the nuclei paraventricularis, and tuberis lateralis were destroyed completely. The nucleus tubero-mammillaris was quite well preserved bilaterally. The cerebral cortex showed no changes.

Here then was a patient with severe mood swings, intellectual deficits and personality changes, with widespread destruction of the hypothalamic nuclei without signs of hydrocephalus and with no evidence of cortical damage. A case very much like this was recorded by Dott in a man of 42 who had a large epidermoid cyst extending up into the hypothalamus but who had no increased intracranial pressure. Dott's patient showed personality changes characterized by acts of indecency; he showed also marked emotional lability, his mood swinging between euphoric complacency and mild depression, and at times venting itself in bouts of weeping or laughing. He too had disturbance of intellectual functions as evidenced by impairment of memory retention and some defect of judgment.

Further evidence for the occurrence of personality changes and disorders of the intellect in hypothalamic tumors is found in a few cases reported by Cox⁽¹⁴⁾. In one pa-

tient, a young man of 27, there was noted an inability to concentrate, carelessness, indifference to his shortcomings, coarseness of habits, and severe memory defects. He was found at operation to have a cyst in the pituitary region which had indented the hypothalamus. Removal of the cyst, which was a craniopharyngioma, resulted in a return to almost normal mentality three weeks after operation. The other case recorded by Cox concerned a woman of 65 who developed dullness and listlessness, trance-like states, gross memory defects, and disorientation. She was found at operation to have an adenoma which indented the hypothalamic region. Operation was followed by a return of memory and a reversal to a perfectly normal mentality after five weeks.

From all this evidence the inference appears justified that in both animals and man the hypothalamus is concerned with the motor expression of the emotions, chiefly emotional excitement. Further consideration will be given to the problem later, but it appears pertinent to our discussion at this point to introduce evidence which seems to demonstrate that it is not the hypothalamus alone which is responsible for the somatic aspects of emotional expression. Keller⁽¹⁵⁾ has observed that typical sham rage can be elicited in animals in which only the cord, medulla, pons, and small caudolateral portions of the midbrain remain intact. Massermann⁽¹⁶⁾ has produced evidence in support of this contention. In cats which have survived large bilateral lesions of the hypothalamus, electrical stimulation of juxta-hypothalamic areas in the subthalamus or mesencephalon produces typical hypothalamic responses. "To be sure, these responses are not as well coordinated and are more easily exhausted than those in animals with an intact diencephalon, indicating that the hypothalamus probably functions in facilitating, integrating and perhaps reinforcing the bodily expressions of emotion. Nevertheless, the observations as a whole indicate that, with appropriate stimuli, not only emotional reactions but even their somatic accompaniments can occur despite the presence of extensive destruction of the hypothalamus and the primary neurones of its descending pathways."

13. Alpers, B. J.: Relation of the Hypothalamus to Disorders of Personality, *Arch. Neurol. & Psychiat.* 38:291-303 (Aug.) 1937.

14. Cox, L. B.: Tumors of the Base of the Brain: Their Relation to Pathological Sleep and Other Changes in the Conscious State, *M. J. Australia*, 1:742-752 (May 15) 1937.

15. Keller, A. D.: Autonomic Discharges Elicited by Physiological Stimuli in Midbrain Preparations, *Am. J. Physiol.* 100:578-586 (May) 1932.

16. Massermann, J. H.: Destruction of Hypothalamus in Cats, *Arch. Neurol. & Psychiat.* 39:1250-1271 (June) 1938.

2. *The Role of the Cerebrum.* That disturbances of emotional expression can occur as a result of cerebral lesions appears to be clear. I have mentioned the fact that rage expressions are more easily elicited in decorticate cats and dogs, probably because the hypothalamus is completely released from cortical control. Attention has been directed recently to the role of the hippocampal cortex in emotional reactions. Papez has shown that in lower vertebrates the medial wall of the brain is connected with the hypothalamus and that this connection is further elaborated in the mammalian brain by the development of the hippocampal formation. According to Papez¹⁷, emotional stimuli pass first to the hippocampal formation and then by way of the fornix to the mammillary body. Thence they pass through the mammillo-thalamic tract to the anterior nuclei of the thalamus and then by the medial thalamocortical radiation to the gyrus cinguli. "The central emotive process of cortical origin may then be conceived as being built up in the hippocampal formation and as being transferred to the mammillary body and then through the anterior thalamic nuclei to the cortex of the gyrus cinguli. The cortex of the cingular gyrus may be looked on as the receptive organ for the experiencing of emotion as the result of impulses coming first from the hypothalamic region, in the same way as the area striata is considered the receptive cortex for photic excitations coming from the retina. Radiation of the emotive process from the gyrus cinguli to other regions in the cerebral cortex would add emotional coloring to psychic processes occurring elsewhere. This circuit would explain how emotion may arise in two ways: as a result of psychic activity and as a consequence of hypothalamic activity." These observations have been carried further by Kluever and Bucy in monkeys¹⁸. Bilateral temporal lobectomy results in definite changes described as psychic blindness, a tendency to examine all objects by mouth, an excessive tendency to take notice of and react to every visual stimulus—referred to as "hypermetamorphosis"—emotional changes, and an increase of sexual activity. The emotional changes are characterized by "either profound changes in emotional behavior or com-

plete absence of all emotional reactions in the sense that the motor and vocal reactions generally associated with anger and fear are not exhibited." Specifically, the reaction of the lobectomized monkey consists of a loss of the wildness and the escape reactions of the normal animal, these being replaced by what is apparently an indifference and an absence of escape patterns. None of the reactions described appeared after unilateral lobectomy, after bilateral removal of the first temporal convolution, after unilateral or bilateral removal of the second and third temporal convolutions, or after severing the connections between temporal and frontal or temporal and occipital lobes. The findings of Kluever and Bucy seem to support the concept of Papez concerning the importance of the hippocampal area, since the emotional changes described occurred in an animal from which the hippocampus was removed, while in those in which the hippocampus was intact, none of the typical symptoms appeared.

Further experiments by Spiegel, Miller and Oppenheimer¹⁹ in cats and dogs show that rage reactions appear with lesions of the olfactory tubercles, of the amygdaloid nuclei, and to some extent also with lesions of the hippocampus-fornix system. All of these areas are in close connection with the hippocampal system. No rage reactions were elicited with lesions confined to the frontal poles.

Finally, mention must be made of the observations of Fulton and Ingraham²⁰, who studied four cats with survival periods of one to three months after incisions were made in the brain anterior to the chiasm from the midline to the olfactory radiation. The experiments were undertaken on the supposition that the frontal lobes give rise to fibers which pass to the hypothalamus. Three cats showed marked rage reactions after a bilateral incision. A fourth cat showed no such response. Fulton and Ingraham concluded that their bilateral lesions had divided cortico-hypothalamic tracts. Unfortunately there is no good evidence that such tracts exist; at least they have not been demonstrated anatomically²¹. It is possible that impulses may reach the hypothalamus

19. Spiegel, E. A.; Miller, H. R.; and Oppenheimer, M. J.: Forebrain and Rage Reactions, *J. Neurophysiol* 3:538-548 (Nov.) 1940.

20. Fulton, J. F. and Ingraham, F. D.: Emotional Disturbances Following Experimental Lesions of the Base of the Brain (Pre-chiasm), *J. Physiol.* 67:27, 1929.

21. Clark, W. E. Le Gros: *The Hypothalamus*, Edinburgh and London, Oliver and Boyd, 1935, pp. 1-69.

17. Papez, J. W.: A Proposed Mechanism of Emotion, *Arch. Neurol. & Psychiat.* 38:725-743 (Oct.) 1937.

18. Kluever, H. and Bucy, P. C.: Preliminary Analysis of Functions of the Temporal Lobes in Monkeys, *Arch. Neurol. & Psychiat.* 42:979-1000 (Dec.) 1939.

from the frontal cortex by way of the septal and subthalamic region. Fibers from the septal region in the guinea pig have been described by Wallenberg as extending from the frontal pole to the antero-dorsal part of the septum. Corticofugal fibers have been traced also from the frontal pole to the zona incerta, whence fiber connections are made with the hypothalamus⁽²¹⁾.

Emotional changes are found, then, in animals with cortical ablations of one form or another, chiefly with temporal lobe ablations, but likewise with interruption of frontal pathways. Support for these findings in human material has not been forthcoming in any degree, largely because of the difficulty of finding lesions confined to restricted cortical areas and because of the multiplicity of function attributed to focal regions of the cortex.

Additional indication of the occurrence of abnormal emotional reactions with lesions of other parts of the nervous system than the hypothalamus is given by cases of compulsive laughing and crying. Such cases reveal clinical features similar in some respects to those of uninhibited rage reactions seen with hypothalamic damage. The emotional expressions of laughing and crying are completely uncontrollable, are evoked by seemingly neutral and insignificant stimuli, and persist for only a short time after the stimulus is active. In all these features compulsive or pathological laughing and crying in the human being resemble the emotional responses seen in animals with hypothalamic lesions. Yet they may be evoked by damage in many parts of the nervous system. They may develop with lesions of the cortex, of the cortex and diencephalon, of the diencephalon alone, or of the midbrain and medulla. Recent studies of Davison and Kelman⁽²²⁾ indicate that destruction of frontal, motor, premotor, or sensory areas may be associated with pathological laughing and crying, and that these areas are connected with the hypothalamus. However many of the reported cases of pathological laughing and crying have been found in association with vascular disease, multiple sclerosis, or other scattered lesions, so that the possibility always exists that the gross softenings found may not indicate the full extent of the lesion responsible for the reaction.

A survey of cases of corpus callosum disease in man brings forth some additional data which may be pertinent. In cases of corpus callosum tumor one may sometimes observe a flatness in emotional responses characterized by apathy and indifference and somnolence which are often striking. Reactions of this sort have been found in patients with tumors confined to the corpus callosum—usually to its anterior portion—and the type of reaction approaches the apathy described by others associated with lesions of the hypothalamus. In Marchiafava's disease, a primary degeneration of the corpus callosum, King⁽²³⁾ reports "emotional disorders, including states of exaggerated excitability and irascibility, leading to acts of violence." Since no cortical disease is found in such cases, the recorded emotional reactions assume some significance; however, the disease always occurs in alcoholic addicts and the symptoms cannot be taken therefore at their face value.

3. *The Role of the Nervous System.* In the assessment of the evidence at hand it is advisable once more to state that it is the physical expression of the emotions, with their associated sympathetic responses, which is under consideration, and not the emotion itself. It appears probable that the hypothalamus is concerned with emotional expression, and that it can be regarded as an integrating area for such reactions. This confined and restricted area is probably played upon by impulses from the cerebral cortex, particularly from the temporal area, but probably also from other portions, and is inhibited by the action of the cortex under normal circumstances. Excitatory as well as inhibitory mechanisms from cortex to hypothalamus have been postulated. The exact mechanism of interaction of the cortex and hypothalamus is not definitely known and cannot yet be stated. As Papez has pointed out, the circuit involved in the expression of the emotions passes through the posterior hypothalamus and the mammillary bodies, and it seems probable that in the hypothalamic region the main discharge occurs. Some regard the hypothalamus as playing a role in the reinforcement and coordination of the neutral and hormonal mechanisms concerned in emotional expression⁽²⁴⁾.

22. Davison, C. and Kelman, H.: Pathologic Laughing and Crying, *Arch. Neurol. & Psychiat* 42:595-643 (Oct.) 1939.

23. King, J. S. and Meehan, M. C.: Primary Degeneration of the Corpus Callosum (Marchiafava's Disease), *Arch. Neurol. & Psychiat* 36:547-568 (Sept.) 1936.

24. Massermann, J. H.: Is the Hypothalamus a Center of Emotion?, *Psychom. Med.* 3:3-25 (Jan.) 1941.

There is little proof that the emotional reactions evoked by hypothalamic stimulation and by disease or ablation of this area are associated with the affective features of the emotions themselves. Massermann⁽²⁴⁾, for example, has found that in animals there is probably no direct relationship between hypothalamic function and affective experience, since "(a) the reactions induced by stimulation of the hypothalamus do not, within limits, greatly modify spontaneous emotional behavior (b) animals with extensive hypothalamic lesions react to emotional stresses and can apparently experience genuine affective states (c) animals subjected to prolonged conditioning procedures . . . do not learn to respond to either the sensory or hypothalamic stimuli in ways analogous to their spontaneous or experimental adaptations to situations of adequate emotional significance."

Animal experimentation emphasizes particularly the pseudo-affective types of reaction, the sham aspects of rage, and the absence of affect. Because of the difficulty in determining the presence of true emotional experience in an animal, human data are more reliable. The reported instances are not numerous, but there are some data pointing to the fact that something which simulates the affective features of emotional experience may be encountered with hypothalamic lesions. Thus in the case of tumor mentioned above⁽¹³⁾ a true depression existed in a person who had never previously suffered from such a disorder, although of course it is not possible to assert that this was not a reactive depression. Grinker and Serota⁽²⁵⁾ found that on strong electrical stimulation of the hypothalamus anxiety sometimes appeared, persisting with crying and expressions of fear. Prolonged sobbing occurred in one case. On the other hand, White⁽²⁶⁾ has stimulated the hypothalamus in 8 human patients under local anesthesia without obtaining emotional reactions. Foerster observed manic reactions on stimulation of the hypothalamus, but did not say whether they were accompanied by an affective emotional state. The compulsive laughing and crying of pseudo-bulbar cases is usually referred to as without affect, but there is doubt as to whether one can exhibit all the physical features of an emotion with-

out experiencing some of the psychological aspects of the emotional experience itself. The data available support the contention that the emotional expression of hypothalamic damage or stimulation in human beings may be associated with some sort of affective response. This is not to say of course that the hypothalamus is responsible for the affective features of the emotions.

The Effect of Organic Disease on Intellectual and Emotional Functions. Organic or structural disease leaves its mark on intellectual as well as emotional functions. It is impossible to cover of course the extensive problem of the relation of intellectual functions to the cerebral cortex, but it may be desirable for the purposes of our argument to indicate some of the data which serve to demonstrate further the inseparability of structure and function. Ablations of the cortex in animals result in various deficiencies of function. The chimpanzee deprived of his prefrontal areas can no longer manipulate sticks as tools in such a way as to solve problems in reaching for food. He shows also a memory defect in the inability to recall after a few seconds' delay the cup under which a piece of food has been hidden. Similarly, monkeys reveal an incapacity to perform this test after parts of the frontal lobes are destroyed. In many cases of destructive lesions of the frontal lobes in human beings similar effects on memory retention have been noted. Removal of the frontal lobe in human beings results in a loss of inhibitory control, a loss of energy, and difficulty in initiation and synthesis of ideas. Interruption of association pathways in the frontal lobes of patients with agitated depressions, schizophrenia, and obsessional syndromes has resulted in a loss of agitation and the development of a placidity not present before the operation. Freeman⁽²⁷⁾ speaks of a bleaching of the affective component connected with the consciousness of the self. "Reduction of the affective component allows the personality to appear in purer form, divested of certain restraining features, but essentially unchanged in regard to energy and intelligence, the principal change being an alteration in the direction of interests from within outward." It is conceivable that the loss of depressions and agitations following shock treatments in psy-

23. Grinker, R. R. and Serota, H.: Studies on Cortico-hypothalamic Relations in Cats and Man, *J. Neurophysiol.* 1: 573-589 (Nov.) 1938.

26. White, J. C.: Autonomic Discharge from Stimulation of the Hypothalamus in Man, *A. Research Nerv. and Ment. Dis. Proc.*, 1939, 20:854-863, 1940.

27. Freeman, W. and Watts, J. W. W.: The Frontal Lobes and Consciousness of the Self, *Psychom. Med.* 3:111-119 (April) 1941

chooses results from physiological interruption of association pathways. In animals such as the rat habits usually mediated through the cortex in the intact animal can be acquired with equal facility in the absence of the cortex, and the same may be true to a lesser degree in higher animals and man.

The occurrence of structural disease parading as a psychogenic disorder has long been noted, and it is a clinical axiom that many organic conditions may be manifested primarily as neuroses. The occurrence of neurotic traits as an early feature of general paresis, the lability of mood or the personality deviations in some cases of brain tumor, the diffuse somatic complaints of patients with pancreatic carcinoma are all sufficiently common to indicate the close relationship of structural and psychogenic mechanisms. This relationship is seen even more clearly in states of delirium due to organic factors of many sorts. A bodily disease explodes as a mental disorder, due in some instances to disturbances in brain metabolism, and in others to the absorption of chemicals and their direct effects on cell action. The changes in the mammillary bodies and the paraventricular nuclei in Korsakoff's psychosis are a further pertinent example. The problem is more clearly etched in the effect of hypoglycemia on brain activity. Nervous symptoms of many sorts develop, among them nervousness, tremor, drowsiness, anxiety, hysterical pictures, and many purely organic symptoms. Mild depression, difficulty in concentration, excitement, compulsions, fugues, hallucinatory states and many other psychogenic symptoms may appear. These are associated with changes in the brain cells and may be caused by the structural cell changes. Physiologically, as Himwich and his workers have shown, insulin hypoglycemia suppresses first the activity of the cerebral cortex, releasing subcortical mechanisms in the basal ganglia and hypothalamus. Later these mechanisms are suppressed and midbrain and medullary activity develops. This is a clear example of a structural disorder manifested by numerous so-called neurotic symptoms.

The result of decreased oxidation in the nervous system is illustrated further by the symptoms of oxygen lack. It has been suggested that anoxia acts by interfering with dextrose metabolism. The reaction of the nervous system to anoxia is well illustrated by the effects produced by high altitudes.

Tremors, ataxia, and involuntary muscle movements are observed. Significant memory loss is observed also in subjects exposed to low oxygen tension. Average college students can remember eight or nine out of ten paired words, but the number is decreased if students are under low oxygen tension. Wortis⁽²⁸⁾ has suggested that the memory loss of age may be due to anoxia, and Cameron⁽²⁹⁾ has shown that there is a decreased oxygen consumption by the brain tissue in senile psychoses. Disturbances in affective behavior have been noted in normal subjects under conditions of low oxygen tension, manifested by impairment of emotional control, elation, flightiness, and mental dullness. Neurotics under similar conditions revealed an even greater lack of emotional restraint.

Lack of vitamins has been found recently to produce neurotic or psychogenic symptoms. Thiamin-poor diets have been found to produce fatigue, lassitude, anorexia, precordial pain, dyspnea, muscle cramps, and palpitation, all of which disappeared on the administration of thiamin. Similar symptoms have been observed in B complex deficiency. The Wernicke syndrome, characterized by mental confusion, ophthalmoplegias, and neuritis, has been produced in experimental animals by a diet deficient in thiamin, and the condition in human patients greatly relieved by the administration of thiamin. The mental confusion in these cases has been found to be due to a multiple vitamin deficiency. Cases of pellagra are sometimes associated with psychoses, due apparently to a combined thiamin and nicotinic acid deficiency. Of even greater significance, however, is the occurrence of what has been ineptly termed the neurasthenic syndrome in pellagra, characterized by fatigue, insomnia, anorexia, vertigo, nervousness, and anxiety, and relieved by nicotinic acid. Studies have shown that deprivation of the B complex results in impairment of judgment without evidence of impairment of other intellectual functions.

Summary

The data which I have presented presuppose a purely mechanistic approach to the problem of mental function and assume that a brain defect is followed by specific difficul-

28. Wortis, H.: Some Nutritional Aspects of Brain Metabolism. *Psychiatric Quart.* 15:693-714 (Oct.) 1941.

29. Cameron, D. E., Himwich, H. E., Rosen, S. R., and Fazekas, J. F.: Oxygen Consumption in the Psychoses of the Senium. *Am. J. Psychiat.* 97:566-572 (Nov.) 1940.

ties in function. This approach has been termed by Putnam the "mosaic" theory of cerebral function, opposed to which is the formulation that "cortical cells are to a certain extent equipotential, so that a reduction of brain mass has as one, at least, of its effects the diminution of the total available number of possible connections between various areas."⁽³⁰⁾ Goldstein, the proponent of the equipotential concept, has shown that after local brain damage there is impairment of many functions, affecting first the more complicated ones⁽³¹⁾. He states that "if by the mosaic theory is meant that any part of the cortex has a functional relation to a definite, separate performance, then I would say that the theory is wrong. If we mean by the mosaic theory that every part of the cortex *contributes* something different to the performances which in themselves are related to the *functioning of the whole cortex*, even the whole organism, then it is correct. There are no isolated performances which are merely expressions of the functioning of single parts of the organism, especially not of a separate part of the brain cortex. Any performance is a reaction of the total organism to some condition in the outer world."

How far is one justified in using biological data to explain psychological phenomena? In spite of valiant efforts to correlate the structural and the psychogenic, there still remains a wide gap which it seems almost impossible to span in our present state of knowledge. Although it is possible to say a good deal about the mechanisms which release the physical expression of the emotions, there is still little which can be said about the relation of structure to the experiencing of emotion. It may be that the answer will never be found in the pursuit of cell function, but it can hardly be denied that a broader knowledge of structure and function must lead inevitably to a more profound understanding of the workings of the human mind and body. In this sense, therefore, the broader use of physical mechanisms in psychiatry is to be encouraged, for it becomes more and more apparent that while structure and psychological function are not the same, they are nevertheless so interdependent that an understanding of the one is essential to a comprehension of the other.

UNDULANT FEVER FROM THE STANDPOINT OF THE GENERAL PRACTITIONER OF MEDICINE

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Malta fever, Mediterranean fever, or slow hospital fever was identified as a clinical entity as early as 1859. At that time clinical reports of this disease were confined to the island of Malta and the adjacent Mediterranean countries. Since that time the disease has been found in all countries of the world, and for that reason the designation which indicated that the disease is prevalent mainly in the Mediterranean region has been discontinued. The genus *Brucella* was named for Bruce in 1887⁽¹⁾, who isolated the first of this group of organisms which was called *Micrococcus melitensis*. The term *Brucella* has been accepted for the group of bacteria responsible for the disease in human beings and animals. The term *brucellosis* indicates infections produced by the *Brucella* group of bacteria.

The organism associated with contagious abortion of cattle was first isolated by Bang, assisted by Stribolt, in 1897⁽²⁾. At that time the organism was isolated from fetuses and fetal membranes of cows that had aborted and it was designated as the *Bacillus abortus* of Bang. The fact that the udder of the cow was the reservoir for *Brucella abortus* was announced by Schroeder and Cotton in 1911 and by Smith and Fabian in 1912⁽³⁾. The chief host of *Brucella melitensis* was found to be the goat. This discovery was made in 1905 by Zammit, who found that agglutinins were present in the blood of goats on the island of Malta at the time the Mediterranean Fever Commission started its work⁽⁴⁾. It was found that the organisms could be isolated from the blood, udder, spleen and lymph nodes of the goat. *Brucella suis* was first isolated by Truam in 1914 from fetuses expelled prematurely by sows. Since that time *Br. suis* has become a well known member of this group⁽⁵⁾.

Prior to 1918 not a great deal of interest

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1. Huddleson, I. Forest.: *Brucellosis in Man and Animals*. New York, The Commonwealth Fund, 1939.

30. Putnam, Tracy J.: The Significance of the Alterations of Mental and Emotional Processes Produced by Diseases of the Brain, A. Research Serv. and Ment. Dis., Proc. (1938) 19:81-107, 1939.

31. Goldstein, Kurt: The Hypothalamus, A. Research Serv. & Ment. Dis., 19:98, 1939.

was given to *Brucella* infections in human beings. In 1918, Alice Evans demonstrated that the organisms of Malta fever (*M. melitensis*) and the organisms of contagious abortion of cattle (*B. abortus*) were closely related, and for practical purposes were indistinguishable¹¹. These observations were of great importance and led to the discovery of the widespread occurrence of *Brucella* infections in both human beings and animals. The work of Huddleson and his associates is of major importance because of his contributions to bacteriological methods which led to the identification of various strains of *Brucella* organisms, his interest in developing a method of skin testing of human beings, and his continued efforts to develop a satisfactory therapeutic agent with which to combat this group of organisms. The veterinary profession has made important contributions relative to the pathological aspects and the distribution and prevalence of these infections in animals, and has developed practical administrative and technical procedures which have been shown to be valuable in the control of Bang's disease.

Brucella infection in human beings may be seen occasionally as a result of contact with dogs. While animals represent the main reservoirs of infection there have been occasional reports of brucellosis in fowls.

The incidence of Bang's disease in cattle in the United States in 1935 was found to be about 11.5 per cent¹². In 1941 the incidence of positive reactors was 2.4 per cent. In that year Bang's disease was reported from every state in this country. From the point of view of the dairy industry, brucellosis constitutes a major financial problem. The milk production of infected herds may be reduced as much as 25 per cent, and the number of calves in a herd affected with Bang's disease may be reduced as much as 40 per cent. This infection has been demonstrated not only in dairy herds, but also in range cattle where lot feeding is practiced during the winter months.

Since the practical eradication of bovine tuberculosis has been accomplished in this country, Bang's disease is probably the most serious disease affecting cattle. It has been stated that from 38 to 50 per cent of all herds that have been tested in the United

States showed the presence of reactors. The widespread dissemination of this infection among dairy cattle, and among range cattle in some areas, not only constitutes a major economic and veterinary problem, but also involves the possibility of reduced meat and milk production for human consumption. There is also the problem of transmission of the disease to the general population, especially to those intimately exposed to cattle.

The prevalence of this disease in hogs has not been studied sufficiently for any dependable statement to be made. It has been estimated that the incidence of infection, based on agglutination tests, is from 1 to 3 per cent. A study should be made to determine whether or not the disease is sufficiently prevalent in hogs to justify eradication measures. In certain areas in the United States *Br. suis* is more prevalent in human beings than is any other *Brucella* infection. This is especially true of the important hog raising area—namely, Iowa and adjacent states. The problem of infection with *Br. melitensis*, the caprine or goat strain of *Brucella*, in the United States is limited to those areas where goat raising is conducted on a commercial scale. Of the total amount of milk consumed in the United States, goat's milk represents a very small proportion. The chief goat raising areas in this country are found in the southwestern states, and it is from these areas that most of the cases of brucellosis of caprine origin have been reported.

Brucellosis in Man: Bacteriology

There are three species of the genus *Brucella* which are commonly associated with infection and clinical manifestation in human beings. In the order of their virulence, they are as follows:

Br. melitensis is associated with the most severe clinical manifestations, although everyone infected with this variety of *Brucella* does not necessarily manifest clinical symptoms. When *Br. melitensis* is associated with clinical symptoms the disease is likely to be severe. Since goat raising is not an important industry in the United States, we do not find many cases of *Br. melitensis* infection, although it is possible for imported dairy products to contain the organisms and cause an occasional case or group of cases in individuals.

Br. suis produces clinical manifestations

2. United States Department of Agriculture. Miscellaneous Publication No. 384. Benefits of Eradicating Bang's Disease.

which are next in severity to those caused by *Br. melitensis*. While no reliable data are available as to the prevalence of this infection in hogs, *Br. suis* in human beings is not uncommon. The majority of clinical *Brucella* infections in Iowa are reported to be of the *suis* variety.

Br. abortus represents the third strain found commonly in the United States. This organism is considered to be less virulent for human beings than either of the other two.

There is evidence that cross infections occur from the three varieties of *Brucella* organisms. On the whole goats do not become infected with the other two strains, but Huddleson¹¹ states that the infection of cattle with the goat strain has been found occasionally. Infection of swine with the *abortus* variety is rare, but infection of cattle with *Br. suis* does occur with relative ease, and epidemics resulting from *Br. suis* transmitted through cow's milk have been reported¹².

Prevalence

Since 1924 there has been an increasing number of cases reported each year. In 1938, there were 4,379 cases reported⁴. The number of reported cases, however, does not reveal the extent of this infection in the general population, as the infection may be present without the production of clinical manifestations.

The prevalence of *Br. abortus* infection in the general population is not known. Huddleson found that in a group of 500 individuals in Michigan composed of an equal number of males and females in all age groups constantly exposed to the *abortus* organism through an infected milk supply only 1.4 per cent showed evidence of infection and only 0.8 per cent showed any evidence of active infection.

Certain conditions in the general population may be associated with a relatively high prevalence of *Brucella* infection. In groups exposed to a milk supply containing *Br. abortus*, from 7.7 to 41 per cent were found to have *Brucella* agglutinins in the serum¹³.

3. Beattie, C. P. and Rice, R. M.: Undulant Fever Due to *Brucella* of the Porcine Type—*Brucella suis*, J. A. M. A. 102:1670-1674 (May 19) 1934.

4. United States Public Health Service, The Prevalence of Undulant Fever (*Brucellosis*) in the United States. Pub. Health Rep. 53:1195-1216 (July 15) 1938.

5. (a) Stone, R. V. and Bogen, Emil: Studies of Correlated Human and Bovine *Brucellasis*, Am. J. Pub. Health 25:350-558 (May) 1935.

(b) Dooley, Parker: Undulant Fever: An Epidemic of Subclinical Infection with *Brucella*. Arch. Int. Med. 50:373-379 (Sept) 1932.

In our experience, 13.2 per cent of one group of individuals were found to have evidence of infection as indicated by the skin test.

In view of the lack of evidence of clinical activity, it is assumed that *Br. abortus* is an organism of relatively low virulence or that the susceptibility of man to *Br. abortus* is not very great. Another factor which may be operating to reduce clinical manifestations in human beings is the fact that milk is pooled and the dose of the organism is reduced. For this reason clinical infections resulting from *Br. abortus* are likely to be latent, asymptomatic infections or associated with mild or moderately severe manifestations.

Other groups in the population that may acquire *Brucella* infection are those in rural areas whose occupations bring them into direct contact with cattle and hogs. Workers on farms and veterinarians show a high incidence of infection. Those exposed to *Brucella* infection in laboratory work usually show a high percentage of infection.

Studies based on 991 cases in Iowa reported by Hardy and his associates¹⁴ indicate that the annual average case rate is high in occupational groups exposed to animal sources of *Brucella* infection¹⁵. They found that among packing house employees the annual reported case rate per 100,000 was 142.5, among male workers on farms 14.5, and among females residing on farms 3.6. For other individuals in the population there was a rate of 3.0 per 100,000, and for children under 10 years of age the rate was 0.4. Similar data, based on skin tests, with reference to packing house employees have been reported by Meyer and by Heathman. These data indicate the importance of *Brucella* infection in certain occupational groups of the population and the necessity for specific control measures.

Additional epidemiological evidence is available to support the belief that these infections are more prevalent among certain groups. This is particularly true when the age and sex distribution of reported cases are analyzed; at least 75 per cent of the cases occur in males whose occupations bring them in direct contact with infected materials. More acute cases occur in males than in females, the acute cases probably arising as a result of direct contact during

6. Hardy, A. V., Jordan, C. F., Borts, I. H. and Hardy, Grace C.: Undulant Fever with Special Reference to a Study of *Brucella* Infection in Iowa. National Institute of Health Bulletin, No. 155, December, 1930.

occupational exposure⁽⁷⁾. The age distribution of reported cases shows that a majority of these infections occur between the ages of 20 and 45. Clinical brucellosis in children is not seen very often.

Modes of Transmission

Brucella infection is transmitted mainly in two ways. First, it may be acquired through the ingestion of unpasteurized milk or cream which contains Brucella organisms. This method of transmission probably accounts for the majority of infections with *Br. abortus*, since unpasteurized milk products are still used extensively in the general population.

The second method of transmission of Brucella infection is through the skin. It has been shown by Morales-Otero experimentally in human volunteers that infection occurs more readily through the abraded skin than through the digestive tract⁽⁸⁾. Organisms which had been isolated for some time when fed to human volunteers did not produce infection by ingestion, but the same organisms produced the disease when placed on an abraded skin surface. Once the organisms penetrate the tissues of the body they enter the blood stream, remain there for varying periods of time and finally localize, probably in the reproductive organs, bones, spleen and lymph nodes of the body. In these tissues foci of infection are established from which the organisms escape from time to time to produce exacerbations of clinical manifestations.

Clinical Manifestations

Brucella infection in the general population may cause acute or chronic cases or may be latent and asymptomatic. The latter type occurs most often. The only evidence of brucellosis may be a positive skin test or a positive agglutination reaction.

The appearance of clinical manifestations will depend on the infecting strain of Brucella, the dose of organisms, the degree of exposure, the resistance of the patient, and whether the infection is transmitted by ingestion or contact with the skin. Those individuals who are in direct contact with con-

taminated tissues, blood or secretions of infected animals are most likely to develop clinical manifestations.

The ingestion of milk containing Brucella organisms of low virulence does not result in a majority of instances in acute cases. Infections that do occur are more likely to be asymptomatic or to cause the chronic type of case. The low incidence of clinical Brucella infection in children, who consume more milk than any other group in the population, may be explained in this manner.

The clinical symptoms of brucellosis are so variable that it is difficult for the physician to make a diagnosis of the disease without the aid of the laboratory.

The length of time between exposure and the onset of symptoms in naturally acquired infections may vary from seven to forty days. In experimental infections in human beings the incubation periods are reported to vary from ten to sixteen days. In an accidental infection in a packing house worker the incubation period was eighteen days.

The physician may encounter Brucella infection in four forms: (a) acute, (b) chronic, (c) subclinical, or (d) latent asymptomatic. The chief symptoms which characterize the acute forms of the disease are weakness, profuse sweating, fever, chilly sensations or chills, headache, pain in the joints and muscles, loss in weight, constipation, insomnia, cough and nervousness. On physical examination the findings are usually very few in comparison with the complaints of the patient. There may be evidence of weight loss, anemia and an enlarged spleen. Acute orchitis may occasionally be the first sign of the disease, and in some cases the onset of the disease may resemble influenza. The leukocyte count may be within normal range but there is usually a leukopenia with a relative lymphocytosis.

The chronic type of the disease is characterized by symptoms which in most instances do not resemble those seen in the acute forms of the disease. Many of the chronic cases follow acute attacks. The symptoms of chronic brucellosis are asthenia, emotional instability, nervousness, insomnia, loss in weight and generalized aching. In many instances a diagnosis of psychoneurosis or anxiety state is made in patients with chronic brucellosis.

The temperature in the chronic forms of the disease may or may not be elevated. When fever is present it is usually less than

7. (a) Heathman, Lucy S.: A Survey of Workers in Packing Plants for Evidence of Brucella Infection. *J. Infect. Dis.* 55:243-265 (Nov.-Dec.) 1934.
- (b) Meyer, K. F.: The Heterogenous Infection Chains as Occupational Diseases. *Arch. f. Gewerbepath. u. Gewerbehyg.* 5:501-582, 1934.
8. Morales-Otero, P.: Further Attempts at Experimental Infection of Man With a Bovine Strain of Brucella Abortus. *J. Infect. Dis.* 52:34-59 (Jan.-Feb.) 1933.

101-102 F.; it may be present for varying periods of time, and usually recurs. The objective findings in chronic brucellosis are not very prominent.

The sub-clinical forms of brucellosis are usually of short duration and may resemble upper respiratory infections lasting three to seven days, with fever and malaise, joint pain or headache. Only one such episode of this nature may occur. Under such conditions the diagnosis may not be suspected.

In population groups exposed through raw milk or occupational exposure infection may occur without the development of clinical symptoms, or symptoms may be so mild that they escape detection. This latter group represents a large proportion of infected persons. It is this type of patient which may cause confusion in the interpretation of positive skin and agglutination tests.

The clinical course of *Brucella* infection may vary from an illness manifested by fever for a few weeks to a disease in which there are recurrences of fever and symptoms over a period of several years. The management of the patient in the early stage of the disease will determine to some extent the course of the disease in the future, so that early diagnosis is of paramount importance.

Diagnosis

The diagnosis of brucellosis in human beings is difficult because the organisms vary in virulence and there is a wide variation in clinical manifestations. The diagnosis can be made only after a careful history is obtained, a physical examination is made and certain laboratory procedures are performed. There are many other infectious diseases which may simulate undulant fever, and these must be excluded. The laboratory procedures which should be performed in making a diagnosis of undulant fever in human beings include a blood culture, which should be positive in a rather high percentage of acute cases and also in chronic cases which exhibit an exacerbation of symptoms. Occasionally, positive blood cultures may be obtained from individuals who do not at the time manifest any clinical symptoms. Techniques are available for cultivating the organism from the blood, but at the present time this is not practicable except in a few laboratories.

Since it is difficult to perform the one test which gives the best evidence of *Brucella*

infection—namely, the blood culture—the agglutination reaction and the skin test are the other procedures that can be carried out to obtain collateral evidence of *Brucella* infection. The agglutination reaction is positive in a high percentage of acute cases, although it may be negative occasionally. It may not be positive in the chronic case, and if it is positive it may be in a low titer, showing no decided rise in titer during the period of acute symptoms. This is in contrast to the agglutination reactions in acute cases. The agglutination test is negative in a high percentage of individuals who have asymptomatic infections. This was shown by studies made in institutional groups, where 4.8 per cent of individuals had positive skin tests while only 1.0 per cent of the same persons had a positive agglutination test. Huddleson and his associates have reported similar data for 855 individuals with positive skin tests, in whom only 13.1 per cent showed positive agglutination reaction by the rapid method⁹. Thus the agglutination reaction is not a reliable method to determine the prevalence of *Brucella* infection in population groups in which epidemiological studies are indicated. Occasionally a positive agglutination for *Bacillus tularensis* may be seen in patients who have brucellosis.

The skin test can be performed with either a *Brucella* vaccine or the nucleoprotein suspensoid known as brucellergen, which was described by Hershey¹⁰. This is a reliable method to determine the presence of infection. The skin test is positive in about 95 per cent of individuals who have been infected with one of the three varieties of *Brucella*, and a positive reaction indicates a state of sensitivity or an allergic reaction. A positive skin test gives no evidence as to the clinical stage of the disease, and should not be used alone as a basis for making a diagnosis of clinical brucellosis. The skin test can be compared with the tuberculin test, in that it indicates a state of sensitization of the tissues and not necessarily an active infection. The skin test may remain positive for a long time in an infected person, and in our experience a majority of individuals found to have positive skin tests do not exhibit clinical manifestations.

The skin test is performed by injecting

9. Huddleson, I. Forest, Munger, Myrtle, Gould, S. E., and Paulson, Doris. A Study of *Brucella* Infection and Immunity in Humans. *Am. J. Trop. Med.* 17:863-880 (Nov.) 1937.

10. Hershey, A. D.: The Chemistry of *Brucella*. Thesis, Michigan State College, 1933. Unpublished.

0.1 cc. of brucellergen intracutaneously in the flexor surface of the forearm. It should be read forty-eight hours after injection. A positive reaction is characterized by a circumscribed area of erythema, edema and infiltration, which may vary in size from 10 to 70 mm. A reaction of 5 mm. is considered positive by some authors. There is rarely any necrosis or sloughing of the tissue at the site of local reaction. In infected persons who have symptoms the skin reaction may be accompanied by more marked manifestations of the symptoms present. Those who are very sensitive will show a systemic reaction along with the local manifestations and may develop lymphangitis above the site of injection. Frequently, erythema without edema or infiltration occurs within the first twenty-four hours. This type of reaction should be interpreted as non-specific. It usually fades within the next twenty-four hours.

When *Brucella* vaccine is to be used as a skin testing agent it should be diluted for such purposes with physiological saline solution so that there will be not more than 200,000,000 organisms per cubic centimeter⁽¹¹⁾. The skin test dose should not be more than 0.1 cc. of diluted vaccine or approximately 20,000,000 organisms. In sensitized persons *Brucella* vaccine will produce abscess formation at the site of injection if the dose is too large. However, if the dose is small, abscesses will not often be seen and the reactions are comparable to those produced by the injection of brucellergen.

In the last few years Huddleson and his associates have been using a phagocytic test to determine the relative degree of resistance in individuals with *Brucella* infection. This test should not be considered a diagnostic procedure, but it can be used to determine the opsonic response of the patient to *Brucella* infection and it is one indication of an immunological response on the part of the patient to his infection. The resistance of a patient with *Brucella* infection may vary from time to time, and the opsonic index will be found to vary accordingly. Huddleson considers that in the case of *Br. abortus* and *Br. suis* infections this test is a good indicator of the patient's resistance to his infection. However, this procedure, while accepted by some investigators, has

not been considered an accurate indication of the degree of resistance by others.

In making a diagnosis of *Brucella* infection the clinical manifestations exhibited by the patient should be considered together with the laboratory procedures available.

Control and Prevention in Man

The reservoir of infection with *Brucella* is primarily in animals, and the prevention of the disease in human beings depends upon the eradication of sources of infection in animals. The danger of *Br. abortus* infection from milk can be reduced almost to a minimum by adequate pasteurization of milk supplies. In rural areas where known infected animals supply milk to individual homes, the home pasteurization method could be applied to the family supply or the reactors could be removed. Thus by the use of pasteurized milk the great majority of the population could be protected from *Brucella* infection.

The pasteurization of milk, however, will not protect certain groups in the population whose occupation brings them into direct contact with infected animals. By a systematic educational program designed to inform these people of the danger of infection, and by advocating the use of prophylactic procedures it should be possible to reduce the number of infections even in these groups. Farmers and veterinarians should protect their hands and arms while attending cattle during parturition. It is well known that such groups do not make use of protective measures which are available. For workers in packing plants, protection of the exposed parts of the body should be effective in preventing infection with the *Brucella* group of organisms. Emphasis should be placed on the use of preventive measures by those groups in packing plants occupying the most hazardous positions.

A high percentage of individuals working in laboratories acquire *Brucella* infection either in clinical or subclinical form at some time by the handling of infected tissues or cultures of *Brucella*. The highly contagious nature of *Brucella* should be made known to laboratory workers. Such materials should be handled with the greatest care. Protection for the hands should be provided and the possible ingestion of cultures through pipettes avoided.

11. Keller, A. E.: A Comparison of Skin Reactions by the Use of *Brucella* Nucleoprotein (Brucellergen) and of Heated *Brucella* Organisms in Sensitized Individuals. *South. Med. Jour.* 33:1180-1184 (Nov.) 1940.

Treatment

It may be said that up to the present time no remedy of a chemical or biological nature has been proven to be a specific therapeutic agent in cases of brucellosis. Generally speaking a high proportion of patients in whom the diagnosis is made in the early weeks of the disease and who are given bed rest and symptomatic treatment respond favorably to almost any form of therapy. If six to eight months elapse before treatment is begun the response may not be satisfactory. Early diagnosis depends upon suspecting the disease and applying the proper laboratory tests. It is difficult to evaluate any form of treatment in a disease such as brucellosis, because a majority of patients will either recover permanently or obtain temporary relief from the disease without treatment.

Foshay has developed an anti-brucella goat serum which is reported to be effective in early cases. This agent, however, is not available through commercial channels. The same investigator has developed an oxidized detoxified vaccine which he uses in the treatment of chronic cases. Brucella vaccine containing suspensions of *Br. suis* and *abortus* killed by heat or formalin is used extensively. In the use of such an agent care should be exercised in the matter of dosage because of undesirable local reactions in patients who are sensitive to Brucella protein. Good results have been reported with vaccine.

In cases seen before the tenth week of illness Huddleson advocates the use of brucellin, which is a filtrate of a Brucella culture. The patient is given an intracutaneous test dose of 0.1 cc. to determine sensitivity. Following that brucellin is injected intramuscularly, the dose depending upon the degree of sensitivity of the patient. The material produces a marked systemic reaction and is nonspecific. The number of doses of brucellin necessary depends upon the stage of the disease and the reaction of the patient. Good results have been reported following treatment with this substance. It is not available commercially except from the Michigan State College at East Lansing.

Fever therapy either by the use of intravenous injections of typhoid vaccine or by means of the electric fever cabinet has also been used with good results. Such methods

of treatment require hospital equipment and specially trained nursing personnel.

Since the advent of the sulfonamide drugs all forms of brucellosis have been treated with them. Sulfanilamide has been used in more cases than has sulfapyridine or sulfathiazole. Opinion is divided as to the efficacy of these drugs. In our experience they have produced good results in acute cases diagnosed in the early stages of the disease. In chronic cases poor results have been obtained. The number of chronic cases may be reduced by early diagnosis and treatment of acute cases before the organisms have established foci of infection in various areas of the body.

General supportive measures such as bed rest, maintenance of the fluid balance and nutrition of the patient, and the administration of iron to combat the anemia which is a common accompaniment of this disease are important procedures. Transfusion of whole blood or the administration of serum is a useful adjunct in the treatment of brucellosis. Blood or serum from immune donors has given good results.

The diagnosis of Brucella infection may be very difficult and should be made with caution, for the public looks upon undulant fever as a disease producing a protracted illness for which there is no specific remedy and a great deal of harm can be done to individuals in whom an incorrect interpretation of the clinical and laboratory data is made. Therefore, a complete review of all points in a case should be made and other infectious processes excluded before a diagnosis of brucellosis is made.

Donors' Curiosity. 50,000 blood donors may well ask 100,000 questions, which are succinctly answered by Fowler and Borer (*J. A. M. A.* 118:421 (Feb. 7) 1942). Donation of 555 cc. of blood causes an average drop of 2.3 Gm. hemoglobin (15% in Hawaiian male standard.) It takes about 50 days to replace this. Smaller losses regenerate earlier, and earlier in men than in women. Administration of iron shortens the regeneration time to 35 days.

Routine bleedings should be spaced at 3 months, unless controlled by hemoglobin estimations.—*Clinico-Pathologic Comment, Hawaii Medical Journal* 1:265 (March) 1942.

Tuberculosis in the Army. Medical tests of Canadian army recruits are being sharpened to the point where today only about one out of 1,000 men develop tuberculosis after being accepted in the army. Since May, 1941, a total of 895 men have been discharged from the army because of pulmonary tuberculosis, but of that number 251 had served for several months before being X-rayed.—Major G. T. Zumstein, Royal Canadian Army Med. Corps., *Bulletin Tuber. Assn.*, March 1942.

SURGICAL DISEASES OF THE SPLEEN, WITH A REVIEW OF THE SPLENECTOMIES AT THE DUKE HOSPITAL DURING THE PAST TEN YEARS

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DURHAM

The first splenectomy, as far as is known, was performed by Fioravanti in 1549⁽¹⁾. In the four centuries since then, not a great deal of progress has been made. In 1857, 83 cases were reported in the literature, and the diagnoses, when interpreted under our present diagnostic headings, were quite similar to conditions for which splenectomy is now performed. They included primarily wounds, abscesses, torsion, and blood dyscrasias. The use of splenectomy for blood dyscrasias was then, and still is a matter of debate. At one time or another splenectomy has been tried for practically every known type of blood disease. It is only by repeatedly charting, cataloguing and reviewing the results obtained, not only at operation, but also at definite follow-up intervals that we can evaluate the benefits to be expected and determine when surgery is indicated. It is with this aim that the following classification of surgical diseases of the spleen is presented, and the statistical results of splenectomy on 35 patients are analyzed and reported (fig. 1).

The following classification has been devised as being both complete and logical:

I. Surgical emergencies of the spleen

A. Rupture

1. Traumatic
2. Spontaneous

B. Torsion of the spleen

II. Infectious diseases

- A. Abscess of the spleen
- B. Splenitis
- C. Syphilis of the spleen
- D. Tuberculosis of the spleen
- E. Echinococcus cyst

III. Tumors of the spleen

A. Primary or true cysts

1. Congenital infoliation cysts
2. Dilatation cysts
3. True neoplasms or neoplastic cysts
 - a. Lymphangioma
 - b. Lymphangiosarcoma

- c. Hemangioma
- d. Endothelioma
- e. Fibroma
- f. Fibrosarcoma
- g. Dermoid
- h. Epidermoid

B. Secondary or pseudocysts

1. Traumatic
2. Degenerative
3. Parasitic

IV. Blood dyscrasias

A. Those in which splenectomy is specific and curative

1. Congenital hemolytic icterus
2. Acquired hemolytic icterus
3. Thrombocytopenic purpura

B. Those in which splenectomy is of questionable value

1. Sickle cell anemia
2. Splenic anemia
3. Banti's disease

Surgical Emergencies

There are two conditions in the spleen which may create a surgical emergency—rupture and torsion. Rupture constitutes by far the largest proportion of these. This may be either traumatic or "spontaneous".

A. Rupture.

1. *Traumatic rupture* of the spleen is seen not infrequently, and there is a characteristic history of injury, with subsequent pain and ensuing shock. The symptoms and signs are those of blood in the peritoneal cavity. The diagnosis is not difficult except in the so-called *delayed* or *subcapsular* rupture of the spleen. In this condition the splenic pulp and fibrous tissue are torn, but there is no division of the peritoneal surface until tension, due to hemorrhage, becomes great enough to rupture the capsule. This rupture may occur at any time from a few hours to five or six days, or even longer, after the original injury. Pain initiated by slight or severe trauma and referred to the left shoulder is almost pathognomonic.

2. *Spontaneous rupture* of the spleen is quite rare, and such a diagnosis should not be made until the history has been very carefully scrutinized. In the literature, however, one finds case reports which are almost irrefutable⁽²⁾. Some of these ruptures have occurred in spleens diseased with malaria

1. Phillips, J. R. and Knoepf, L. F.: Role of Splenectomy, *Am. J. Surg* 48:617 (June) 1919

2. Bologna, M.: Spontaneous Rupture, *Reforma Med.* 56:669 (July) 1910.

DISEASE	No. of Cases	Hospital Deaths	Late Deaths	Unimproved	Improved	Cured	Percent. of cures	Mortality
Rupture	2					2	100%	
Congenital hemolytic jaundice	8					8	100%	
Acquired hemolytic jaundice	1					1	100%	
Thrombocytopenic purpura	2					2	100%	
Sickle cell anemia	5	1*		1	3			20%
Splenic anemia	5				5			
Banti's disease	9	3	3	1	2			33%
Painful splenitis	1					1	100%	
Indeterminate	2			2				
TOTALS	35	4	3	4	10	14		
Total Percentages		11.4%	8.6%	11.4%	28.6%	40%		

*Died of pneumonia

Fig. 1. Analysis of splenectomies performed at Duke Hospital during the past ten years.

or in myelogenous leukemia with splenomegaly⁽³⁾. A case of spontaneous rupture of a normal spleen during labor⁽⁴⁾ and another during typhoid fever⁽⁵⁾ have been reported. C. K. Chi, in 1939, gathered 13 well authenticated cases from the literature⁽⁶⁾.

B. Torsion.

Torsion of the spleen is found most frequently as a complication of the so-called "wandering spleen". Occasionally the spleen has a long pedicle, so that it may migrate according to the patient's position. Some surgeons have advised a splenopexy for this condition, but the general feeling now is that either the spleen should be removed as an elective procedure⁽⁷⁾, or the patient should be thoroughly acquainted with the situation and splenectomy performed only for definite symptoms of torsion⁽⁸⁾.

Infectious Diseases

The spleen is considered resistant to infection because of its abundant blood supply. However, numerous cases of solitary metastatic abscess, with or without a perisplenitis, are reported. One typhoid abscess of the

spleen has been reported⁽⁹⁾. Although the literature contains several reports of primary abscess of the spleen⁽¹⁰⁾, it is difficult to exclude some initial focus of infection. It is quite possible for an acute abscess to develop into a chronic splenitis, and this sometimes happens. Splenectomy is indicated in both of these conditions. Drainage of an abscess, even when it is performed in two stages, carries a high mortality.

Involvement of the spleen is seen in both the secondary and tertiary stages of syphilis, and if swelling and pain do not disappear after several months of adequate therapy splenectomy is indicated.

Tuberculosis of the spleen is not unusual, and it is commonly associated with widespread disease elsewhere. If the spleen alone is involved splenectomy may be very beneficial to the patient, as death invariably results otherwise⁽¹¹⁾.

Echinococcus cyst is actually an infection, but it will be considered under cysts of the spleen.

Tumors of the Spleen

Almost all tumors of the spleen are of a cystic nature. Fowler has given a very thorough classification of cysts⁽¹²⁾. Goldberg recently collected numerous reports of solid splenic tumors from the literature and added 4 cases of his own⁽¹³⁾. The incidence of these

3. (a) Solar, P. Saurez: Rupture of a Malarial Enlarged Spleen Producing Internal Hemorrhage, *Rev. Med. Quir de Oriente* 1:11 (March) 1940.

(b) Neil, J. M.: Rupture in Myelogenous Leukemia, *M. Bull. Vet. Admin.* 17:96 (July) 1940.

4. Shannon, W. F.: Spontaneous Rupture During Labor, *Am. J. Obst. and Gynec.* 40:323 (August) 1940.

5. Roberson, Foy: Solitary Cysts of the Spleen, *Ann. Surg.* 111:848 (May) 1940.

6. Chi, C. K.: Spontaneous Rupture of Normal Spleen, *Chinese M. J.* 56:374 (October) 1939.

7. Romif, C.: Preoperative Diagnosis of Torsion of Pedicle of Spleen: Report of Case with Splenectomy Followed by Recovery, *Arch. Surg.* 41:781 (September) 1940.

8. (a) Bokrer, J. V.: Torsion Wandering Spleen, *Ann. Surg.* 111:116 (March) 1940.

(b) Peple, W. L.: Case of Spleen in Pelvis and Twisted on Pedicle, *Virginia M. Monthly* 67:298 (April) 1940.

9. Ransohoff, J. L. and Rourke, W. O.: Typhoid Abscess of Spleen in Hemolytic Jaundice, *J. A. M. A.* 114:2343 (June) 1940.

10. Brandt, L.: Primary Abscess of the Spleen of Unknown Origin, *Ugesk f. Læger* 102:442 (May 2) 1940.

11. Pool, E. L., in Christopher: *Textbook of Surgery*, Philadelphia, W. B. Saunders.

12. Fowler, R. H.: Cysts of the Spleen, *International Abstracts Surg.* 70:213, 1940.

13. Goldberg, S. A.: Primary Neoplasms of Spleen, *Am. J. Clin. Path.* 10:700 (October) 1940.

solid tumors is low. At the Boston City Hospital, 2 such cases were found in 40,000 admissions and three hemangiomas were found in 1900 autopsies. Several epithelial and epidermoid cysts have been reported⁽¹⁴⁾. Several argentaffine tumors have been reported in the Japanese literature⁽¹⁵⁾.

The majority of splenic cysts are large and contain old blood and a serous lining. There is considerable doubt concerning the etiology; degeneration and late results of trauma and hemorrhage are the most important probable causes^(16, 5).

According to Fowler⁽¹²⁾, true cysts account for 21 per cent of all cases and false cysts for 79 per cent. Of the true cysts, echinococcus ones are twice as common as all others. Cysts of the spleen are also said to occur in 2 per cent of all cases of hydatid disease. Seventy-one per cent of the false cysts are hemorrhagic. There is a history of malaria in 74 per cent of these cases, of syphilis in 11 per cent, and of trauma in 23 per cent.

Blood Dyscrasias

A. Those in which splenectomy is specific and curative

We find three types of blood disease in which splenectomy is indicated and, for all practical purposes, is curative. Two of these, congenital or familial hemolytic icterus and acquired hemolytic icterus, differ only in the antecedent history. The course of both types of the disease may be mild, although acute phases of jaundice and blood destruction are often initiated by infections such as tonsillitis and sinusitis. The diagnostic findings are the presence of micro-spherocytes, increased fragility of the cells, and active regeneration of the erythrocytes. The spleens are large (fig. 2A). Splenectomy produces an immediate remission of symptoms and a rapid rise in the hemoglobin. Three children from one family who suffered from the disease are shown in figure 2A. A 17 year old brother also had episodes of jaundice. All four had their spleens removed in April, 1939, and figure 2B shows the same three children sixteen months later. One can see a rather marked change in the general condition and growth

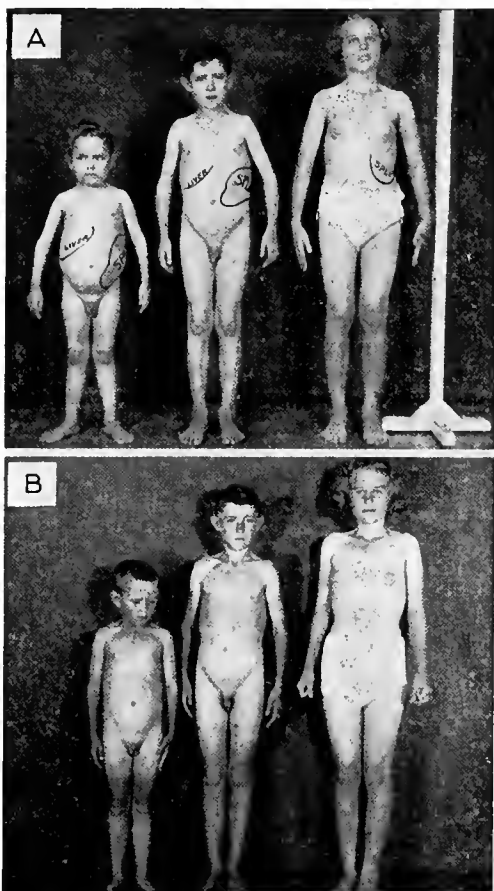


Fig. 2A. Three children from one family with hemolytic icterus before splenectomy.

Fig. 2B. The same children sixteen months after splenectomy.

of each child. Their hemoglobin determinations on the original admission were 23 per cent, 45 per cent, and 50 per cent. In 1940, they were 80 per cent, 88 per cent, and 83 per cent. Nine cases of hemolytic jaundice were studied (fig. 1), but the fragility tests were run preoperatively and postoperatively in only three. In two of these the fragility decreased somewhat but did not become normal, and in one it did not change. The cause of the increased fragility has been the subject of widespread study. C. Tsai, J. S. Lee, and C. H. Wu⁽¹⁷⁾ have shown striking differences in the fragility of red cells taken from

14. (a) Kaijser, R.: Cystic Tumors of Spleen, Epithelial Origin, Upsala laekaref. foerh. 45:261, 1939.
 (b) Lereboullet, P.; Gregoire, R.; Bernard, J.; and Ibarra, R.: Epidermoid Cysts of Spleen With Report of Case in Child, Sang. 13:853, 1939.
 15. Nakano, T.: Argentaffin Tumors of the Human Spleen, Tr. Soc. Path. Jap. 30:68, 1940.
 16. (a) Cyst of Spleen, Cabot Case 26252, New England J. Med. 222:1052 (June 20) 1940.
 (b) Cole, F. L. and Forsee, J. H.: Cavernous Hemangioma of Spleen, Surg. 8:689 (October) 1940.

17. Tsai, C.; Lee, J. S. and Wu, C. H.: Role of Spleen in Altering Erythrocytic Fragility, Chinese J. Physiol. 15:165 (April 30) 1940.

the splenic artery and of those taken from the splenic vein. Their experimental studies show that changes in the Ph of the blood have a mild effect on cell fragility and that variations in the amount of time the blood has remained in one place have a marked consistent effect. They conclude that the greatest cause for the increased fragility is the stagnation of blood in the splenic sinuses. Among the deleterious effects of the disease are the formation of gallstones in 70 per cent of the adults (presumably due to the hyperbilirubinemia⁽¹⁸⁾), hyperplasia of the bone marrow, widening of the bones, and retardation of growth⁽¹⁹⁾. Langston⁽²⁰⁾ reported a case of infantilism associated with hemolytic icterus, which improved rapidly after splenectomy.

Hemorrhagic purpura which is definitely of the thrombocytopenic type can be cured by removal of the spleen unless the disease has been present long enough to cause excessive liver damage. Some authors have ascribed this diminution of platelets to platelet reducing substances in the spleen⁽²¹⁾. Not all are in agreement with this hypothesis, however. Wilensky⁽²²⁾ and others⁽²³⁾ have advised operation during a remission of the bleeding, but at times splenectomy may be compulsory during the acute stage as a life saving measure. The platelets rise sharply after operation, and several cases of thrombosis of the remaining portion of the splenic vein and of the portal system have been thought to be due to this rise. In general, a permanent cure is obtained. Most of the reported recurrent episodes of bleeding clear up when chronic infections are eliminated⁽²⁴⁾. In one of my cases, the platelet count ranged from 0-12,000 during ten preoperative days and then rose to 780,000 forty-eight hours after operation. During the next few months, the count was estimated at from 400,000 to 550,000.

Occasional recurrences have been ascribed to the hypertrophy and hyperplasia of remaining accessory splenic tissue. Wilensky⁽²²⁾, Settle⁽²⁵⁾, and others have emphasized the importance of searching carefully for any accessory spleens and removing them.

B. Those in which splenectomy is of questionable value.

There are three commonly encountered blood diseases in which splenectomy is justifiable, but frequently has little, if any, effect upon the course of the disease. These are: (1) sickle cell anemia, (2) splenic anemia, and (3) Banti's disease. In the group studied there were 5 cases of *sickle cell anemia* for which splenectomies were performed; three patients are improved, one is unimproved, and there was one death due to pneumonia. The patients who showed improvement have been followed from two and a half to six years, and have frequently had recurrent attacks of abdominal pain. The unimproved patient has continued to have leg ulcers.

This disease is, of course, confined to the Negro race. Sickle cells are formed within a few moments to twenty-four hours after the blood is drawn. This effect is lessened after splenectomy, but by no means arrested. It is hoped that splenectomy helps the patient by removing the organ in which stasis is most pronounced and destruction of erythrocytes is greatest.

Under the heading of *splenic anemia* are included the idiopathic hemolytic anemias with splenomegaly. Little has been added to Osler's description of this disease. Improvement may be expected to follow splenectomy if the syndrome has not been present long enough to cause secondary cirrhosis and ascites.

Banti's disease is an indefinite syndrome probably representing a terminal entity resulting from a number of related preceding conditions⁽²²⁾.

In both of these conditions splenectomy lightens the load thrown on the liver by reducing by at least 20 per cent the blood in the portal circulation; it removes possible toxic substances originating in the spleen; and it removes the splenic factor in the destruction of blood⁽²⁴⁾.

Omentopexy should probably be done in conjunction with splenectomy, as it assists the establishment of collateral circulation.

Settle, E. B.: Surgical Importance of Accessory Spleens. *Am. J. Surg.* 50:22 (October) 1940

15. Pemberton, J. deJ.: Indications for Splenectomy. *South. Med. and Surg.* 102:46 (February) 1940.
19. Diamond, L. K.: Indications for Splenectomy in Childhood. *Am. J. Surg.* 39:400 (February) 1935.
20. Langston, W.: Hemolytic Icterus with Infantilism. *South. M. J.* 25:316 (April) 1935.
21. (a) Hodge, I. G. and Strong, P. T.: Effect of Splenic Extracts of Patients with Thrombocytopenic Purpura on Platelet Count of Rabbits. *Bull. Ayer Clin. Lab. Pennsylvania Hospital* 5:267 (December) 1939.
- (b) Pubegni, R.: Existence and Mode of Action of Thrombocytopenic Factor. *Polio-lenico* 47:1 (January) 1940.
- (c) Hobson, F. C. G. and Witts, L. J.: Platelet Reducing Extracts. *Brit. M. J.* 1:50 (January 13) 1940.
22. Wilensky, A. O.: The Indication for Splenectomy in the Association of Anemia and Splenomegaly. *Surg.* 9:99 (January) 1941.
23. Collins, H. O.: Indications for Splenectomy. *South. M. J.* 35:656 (June) 1940.
24. Pemberton, J. deJ.: The Diagnosis and Treatment of Purpura Hemorrhagica. *Am. J. Surg.* 24:793 (June) 1934.

Ligation of the coronary vein⁽²⁶⁾ has also been advised as an aid in preventing esophageal varices and hemorrhages. This procedure is apparently of little value, however, as the Mayo Clinic still reports postoperative gastric hemorrhages in 50 per cent of these cases⁽¹⁸⁾. Our series of splenectomies includes 5 cases of splenic anemia, with no mortality and with improvement in all. There are 9 cases of Banti's disease in this series. Three of these patients died in the hospital; three died within four to eighteen months; 1 is still having gastric or esophageal hemorrhages, and 2 are definitely improved.

Operative Considerations

The operative mortality is influenced by the original disease, the severity of anemia, the degree of hepatic damage, and the age of the patient. Glucose should be given preoperatively. Vitamin deficiencies and abnormalities of the protein content and of the albumin-globulin ratio, which are usually present, especially in the cases with ascites, should be corrected as far as possible. Wound disruption is frequent, and occurred in 3 of our cases. All of them were patients with Banti's disease and all had ascites. The operation is of little value and is probably contraindicated in such late cases.

Preparations for a transfusion should be made before the operation, in case this is necessary, and a basin containing citrate solution should be available. In case of the severe hemorrhage which occurs if the pedicle is accidentally torn blood may be siphoned or sponged into this basin and immediately reinjected into the patient⁽²⁷⁾. This was done in one of my cases. An immediate auto-transfusion may be obtained by the injection of 1 cc. of adrenalin into the spleen one minute before clamping the splenic vein. The erythrocytes may be increased by as much as 800,000 to 1,000,000 cells, as has been demonstrated by Whipple.

Summary and Conclusions

1. The results of splenectomy on 35 patients are presented.
2. Infectious diseases are found to be very rare.
3. Tumors of the spleen are infrequent and are usually false cysts.

4. Although splenectomy has been performed for practically every known blood dyscrasia, it is of proven value in only three types:
 - a. Familial hemolytic icterus
 - b. Acquired hemolytic icterus
 - c. Thrombocytopenic purpura
5. Only 2 out of 9 patients with Banti's disease improved; 3 died in the hospital, and 3 more died within two years.
6. Of the 35 patients on whom elective splenectomies were performed, 11 per cent died in the hospital, and there were 8.5 per cent late deaths; 11 per cent were considered unimproved, 28 per cent improved and 40 per cent cured.

THE ENDOCRINE FUNCTIONS IN PREGNANCY

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The maternal organism undergoes fundamental modifications during pregnancy. From the time of conception to the time of delivery there are manifold changes occurring, not only in the reproductive organs and mammary glands but also in the organism generally. These changes are influenced by the hormones elaborated during this period. The finely coordinated events occurring during pregnancy are made possible by an interplay of endocrine factors. The great advances of recent years in the field of female endocrinology have elucidated many of the bodily changes occurring during pregnancy and have led to the justifiable hope that a knowledge of abnormalities in the endocrine balance during pregnancy might throw light on the pathological states affecting reproduction, and might suggest appropriate therapeutic procedures⁽¹⁾.

All three of the female sex hormones—the estrogenic, the progestational and the gonadotropic hormones—play a role in normal pregnancy, as is evidenced by the high concentrations in which they appear and the changes in their titer during gestation. We shall, therefore, consider each of these hormones separately and attempt to assign to each its specific functions.

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From the Department of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

1. Grollman, A.: *Essentials of Endocrinology*, Philadelphia, J. B. Lippincott Co., 1941.

26. Rowntree, L. C.; Walters, Waltman; and McIndoe, A. H.: A New Procedure in the Management of Cirrhosis of the Liver, *Proc. Staff Meet., Mayo Clinic* 4:121 (April) 1929.
27. Johnson, P.: Auto Transfusion in Rupture, *West Virginia M. J.* 36:127 (March) 1940.

Estrogens

In the human female (this is not true of all other species) the estrogen content of the urine increases until parturition, after which it rapidly declines. The amounts excreted in different individuals vary from 15,000 to 80,000 international units per liter of urine in the first half of pregnancy. Practically all of this estrogen (97 to 98 per cent) is excreted in the form of the physiologically inert glucuronate, until just before the commencement of labor, when 10 to 20 per cent is excreted in the free form. However, the fact that this increased excretion of the free hormone does not consistently appear throws doubt on the assumption that it plays a part in inducing labor. As labor proceeds, the amount of estrogen excreted may diminish. In non-pregnant women the proportion of estrone to estriol is 1:1, but during pregnancy the ratio of these substances may vary from 1:1 to 2:3⁽²⁾.

The Progestational Hormone

The corpus luteum plays an important role during pregnancy. Following ovulation, the hormone of the corpus luteum effects the uterine changes which are necessary for nidation of the fertilized ovum. Failure of the corpus luteum to produce a sufficient amount of its secretion (progesterin) would therefore interfere with nidation. Removal of the corpus luteum during early pregnancy results in abortion; hence, a failure of its normal secretion has been considered to be one of the causes of habitual abortion. This is the basis for the use of progesterone in this condition, although the evidence for the efficacy of this form of therapy is still incomplete.

In the human female the corpus luteum degenerates during the later months of pregnancy and the ovaries can be removed without interrupting pregnancy. There is, however, at this period an abundant production of the progestational hormone by the placenta. The latter organ thus takes over the internal secretory function of the ovary as regards the production of both estrogen and the hormone of the corpus luteum.

Our knowledge of the rate of secretion of the progestational hormone is based on a

determination of the excretion of pregnandiol. This gradually increases during pregnancy to about 8 mg. per day at the end of the fourth month. After this, there is a precipitous rise to an average of about 40 mg. (10 to 80) per day. Thereafter, there is only a slight rise to a maximum of 20 to 120 mg. at term (average, 50 mg.)⁽³⁾.

The increase in size and other changes in the uterus during pregnancy are in part probably secondary effects of the gradually increasing bulk of the products of conception, but are also regulated probably by the estrogenic and luteal hormones. The peristalsis of the Fallopian tubes, which propels the ovum into the uterus, and the normal uterine motility during pregnancy and at parturition are also believed to be controlled primarily by these hormones.

The Chorionic Gonadotropin

With the formation of the chorionic villi, there appears in pregnancy a glycoprotein substance variously designated as the anterior-pituitary-like hormone, prolan, cyonin, chorionic gonadotropin, as well as by a number of proprietary brand names. The presence of this substance in the urine is the basis for the Aschheim-Zondek and Friedman tests for pregnancy. The production of this substance may be looked upon as a specific endocrine function of the chorionic tissue, in addition to the production of estrogen and progesterone, which, as we have already seen, is also taken over by the placenta.

The chorionic gonadotropin appears in the urine soon after the first missed menstruation, and increases in amount until it reaches a maximum at the twentieth to the sixtieth day of gestation. At its peak 75,000 to 1,000,000 or more international units may be excreted daily. It then decreases to 1000 units or less per liter, rising slightly during the last month, and disappearing entirely about five days postpartum. The blood level parallels these urinary concentrations. Other tissues related to the chorion (chorionepithelioma, hydatidiform mole, teratoma, seminoma) also produce this hormone.

The exact function of the chorionic gonadotropin in pregnancy is still not clear. Indeed, it can not be said with certainty that it actually performs any physiological function. Of particular interest is the relation

2. Dingemans, E.; Laqueur, E.; and Muhlbock, O.: Ueber die Ausscheidung oestrogenen Hormone in Harn schwangerer Frauen, Monatschr. f. Geburtsh. und Gynaek. 109: 37 (April) 1939.

3. Hamblen, E. C.: Endocrine Gynecology, Springfield, Charles C. Thomas, 1939.

of abnormalities in the production of this substance to pathological states. The Smiths⁽⁴⁾ have reported finding high levels in the blood serum during the fifth, sixth or seventh months of pregnancy, and believe that such findings give evidence of an impending eclampsia. In only 12 per cent of their eclamptic patients was this elevation not observed. They claim that excessive amounts are demonstrable in the serum four to six weeks before clinical symptoms are present. Associated with the increased chorionic gonadotropin, there was also observed a relative decrease in the estrogen content of the urine, serum and placenta of toxemic patients. These findings, particularly in diabetic patients, have suggested that an imbalance in the hormones of pregnancy are responsible for toxemic states and that they may be remedied by injections of the appropriate hormones. Confirmation of these claims has, however, not been reported.

Conclusion

Because of the relation of the estrogenic and progestational hormones to the growth, motility and other cyclic changes occurring in the female genital tract during pregnancy, it is tempting to consider abnormalities in the rate of the production of these hormones as the causes of many pathological deviations from the normal, and to attempt to remedy the latter by injection of the appropriate hormone. Unfortunately, in most cases clinical confirmation of these claims has not been made. The sex hormones have been employed for many conditions in which the evidence of their effectiveness is meager.

4. Smith, G. V. and Smith, O. W.: Anterior Pituitary-Like Hormone in Late Pregnancy Toxemia, *Am. J. Obst. and Gynec.* 38:618 (Oct.) 1939.

Central Nervous System Involvement in Syphilis.—It is now well known that when the central nervous system is involved by syphilis this involvement takes place in the early stage of the infection . . . The majority of the investigations report abnormalities in 25 to 40 per cent of the fluids removed after the appearance of the secondary rash. The very significant conclusion which can be drawn from these studies is not that the cerebrospinal fluid may be involved in the early stages, but that when it remains normal for two or more years after the primary infection it will always remain so and parenchymatous neurosyphilis will never develop.—H. Houston Merritt, M.D.: *The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System*, New England J. Med. 223:446 (September 19) 1940.

ARACHNODACTYLY (MARFAN'S SYNDROME)

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Arachnodactyly was originally described by Marfan in 1896, and since that date less than 200 cases have been reported in medical literature. This apparent rarity alone may justify the presentation and discussion of a family group in which symptoms of the disease were found; but since, in addition, arachnodactyly was associated with recurrent lymphocytic meningitis in one member of the group, this clinical material may have further value.

Arachnodactyly is probably more common than the number of reported cases would indicate. The multiplicity and insidious development of the symptoms combine to make it of general clinical interest and of particular importance to the pediatrician, the ophthalmologist, the neuropsychiatrist and the orthopedist; for each may be the first to have the opportunity to diagnose it.

Characteristics of Arachnodactyly

Arachnodactyly, variously known as dystrophia mesodermalis congenita, typhus Marfanis, Marfan's syndrome, and dolichostenomelia, is characterized by an elongation of the bony structure, ectopia lentis, weak musculature, and a typical aged physiognomy (fig. 1). These anomalies may be present at birth, but more frequently are first noted following some intercurrent disease, such as measles or influenza, in the early stages of life. Weve, quoted by Burch⁽¹⁾, found the sexes to be equally affected, but there are some authors who believe that it is more common in females.

In the spider-like elongations of the bones of the hand may be found the origin of the name arachnodactyly, first used by Achard in 1902. Burch⁽¹⁾ in his review of 120 cases, reported that the bones show no true pathological change on roentgenological examination. The most striking bony changes are the elongation of the metacarpals and metatarsals; spinal deformity (scoliosis, kyphosis, and kyphoscoliosis), which occurs in about

1. Burch, F. E.: Association of Ectopia Lentis with Arachnodactyly, *Arch. Ophth.* 15:645 (April) 1926.

50 per cent of the cases; the dolichocephalic skull; and the high palatal arch. Ocular abnormalities (dislocated lenses, iridodonesis, high myopia), cardiac involvement in about 35 per cent of the cases, undeveloped musculature with ligamentous relaxation, and lack of subcutaneous fat are all characteristic of the complete picture of arachnodactyly.

It is rare to find a case showing all these types of abnormalities, and the symptoms may appear one by one. The elongation of the bones is often the first sign to be recognized, but the family is not likely to look upon this as a matter requiring medical attention. If a victim develops a marked undernourished appearance, or curvature of the spine, as did one member of the family to be discussed, he may seek treatment. It is more than likely that his illness will be wrongly diagnosed and he will be given nothing more than vitamin extracts and a high caloric diet.

Some degree of spinal deformity has been noted in almost all cases^(1,2). This might conceivably be due to lack of support by the soft parts, but this explanation does not suffice for elongated fingers. When these symptoms are found in conjunction, arachnodactyly should be suspected.

Because the dislocation of the lenses causes most discomfort to the patient, the ophthalmologist is often the first to have the opportunity to diagnose the condition. Although it may not at first be present, ectopia lentis is considered by Lloyd and others to be an integral part of the syndrome. Marfan and Burch report that eye symptoms are observed in some 40 to 50 per cent of cases.

Although unexplained isolated cases do occur⁽³⁾, it is the general consensus of opinion that arachnodactyly is familial, and that it is inherited according to Mendelian laws. Duke-Elder⁽⁴⁾ states that the condition is transmitted as a dominant characteristic, but opinion on this point is not unanimous⁽⁵⁾.

There is also some conflict of opinion concerning the effect of arachnodactyly on the



Fig. 1. G. H. at the age of 16.

mentality. Burch⁽¹⁾ is of the opinion that the mentality is not affected and that the intelligence is frequently of a high order. Lloyd⁽⁶⁾, on the other hand, has most frequently found the condition among the feeble-minded, and others^(2c, 7, 8b) have reported arachnodactyly in imbeciles and mental defectives.

Case History

G. H. was the youngest of a family of eight, six of whom presented symptoms of arachnodactyly (fig. 2). The disease had apparently been handed down from the mother's side of the family, probably as a prominent Mendelian characteristic. Mrs. H. and four of her nine siblings had some symptoms of arachnodactyly. The maternal grandfather and at least four of his siblings are also believed to have had some features of the syndrome (fig. 3).

G. H. himself was a gangly, poorly developed white male with extremely long fingers

2. (a) Lloyd, R. I.: Arachnodactyly (Dystrophia Mesodermalis Congenita, Typhus Marfanis; Marfan's Syndrome; Dolichostenomelia), *Arch. Ophth.* 13:744 (May) 1935.
- (b) Oloott, C. T.: Arachnodactyly (Marfan's Syndrome) With Severe Anemia, *Am. J. Dis. Child.* 60:660 (Sept.) 1940.
- (c) Flno, R. H.; Cooper, E. L.; Van Wlen, S.: Arachnodactyly and Status Dysraphicus, A Review, *Ann. Int. Med.* 10:1130 (Feb.) 1937.
3. (a) Moore, T. L.: Arachnodactyly, *Arch. Ophth.* 21:854 (May) 1939.
- (b) Stewart, R. M.: A Case of Arachnodactyly, *Arch. Dis. Childhood* 14:64 (March) 1939.
4. Duke-Elder, W. S.: *Textbook of Ophthalmology*, St. Louis, C. V. Mosby, 1938, v. 2, p. 1352.
5. Harrison, J. and Kline, M. J.: Arachnodactyly: Its Occurrence in Several Members of One Family, *New England J. Med* 220:621 (April 13) 1939.

6. Lloyd, R. I.: A Second Group of Cases of Arachnodactyly, *Arch. Ophth.* 17:66 (Jan.) 1937.
7. Rambar, A. C. and Denenholz, E. J.: Arachnodactyly, *J. Pediat.* 15:844 (Dec.) 1939.



Fig. 2. Family group. G. H. is fourth from the right and E. H. is second from the left.

and toes and a peculiar but typical physiognomy (fig. 1). Some characteristics of Marfan's syndrome, such as the elongated bones and weak muscles, were already well demonstrated in him at the age of 6, when he was referred to me with his first attack of lymphocytic meningitis; then their significance was not recognized, however, and the eye signs were not present. It was on his second visit, ten years later, that examination revealed ectopia lentis of both eyes; this finding in conjunction with the other characteristics led to the diagnosis of arachnodactyly and to a decision to investigate his family background.

At the age of 16 G. H. presented the undeveloped, ill nourished appearance which is characteristic of arachnodactyly and is the product of the combined effect of lack of subcutaneous fat and poorly developed musculature. Perhaps the most striking feature of his case, however, was the characteristic development of the bony structure. Beginning life as an apparently normal baby, he developed a dolichocephalic skull, and the bones of his hands and feet became abnormally elongated as he grew older (fig 1). This

elongation did not seem to have resulted directly from any intercurrent infection. The only history of possible infection during his sixteen years was that of chronic tonsillitis preceding tonsillectomy performed at the age of 14. It is more than likely that his tonsils were removed in an attempt to benefit his general health.

The unusual elongation of the bones had first been noted when he was about 4 years old, and had progressed in the succeeding years. This was the symptom most noticeable in his mother and other relatives, who apparently had less pronounced arachnodactyly. His arms and legs were elongated, as well as his hands and feet, and he had a rachitic deformity to the right of the sternum. He has not, at the present date, developed spinal curvature, but this may yet follow. His sister, E. H., aged 23, in whom the symptoms are developing in different order, had a right dorsal left lumbar scoliosis of the spine, with no compensatory curve, and a heart thrill due to endocarditis. A two stage fusion operation was done for the scoliosis in 1938 and 1939. Following the second operation there was an almost fatal heart failure. A back brace was prescribed for the

ARACHNO-DACTYLY

MARFAN'S DISEASE

DR. A. A. BARRON

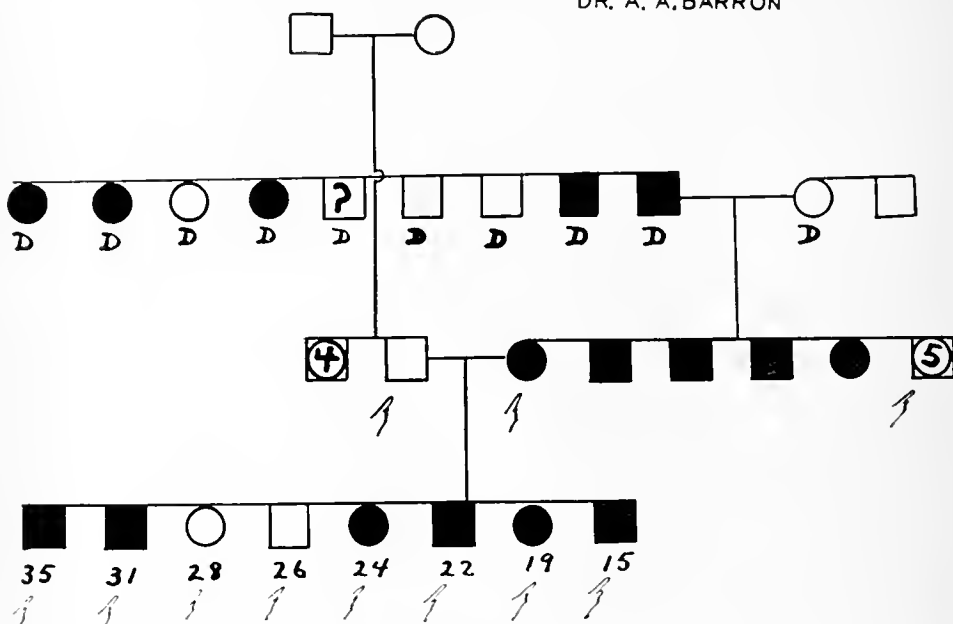


Fig. 3. Pedigree by Dr. William Allan

Squares indicate males, circles females.

Black squares and circles indicate members showing symptoms of arachnodactyly.

Pointing hand indicates members examined.

pseudo-arthritis which developed between the two fused areas. At that time it was not suspected that her condition was due to arachnodactyly.

In the case of G. H. there was no cardiac involvement, as is so often recorded, and except for a to and fro friction rub over the apex the heart appeared to be normal. Time will show how far muscular weakness may affect his heart; for death from cardiac involvement, at an early age, is often the terminal stage of arachnodactyly. However, various factors affect the prognosis, and it appears that characteristic symptoms which develop fatally in one case may lie comparatively dormant in another. If the patient does not ultimately succumb to a heart disorder, the general weakness often predisposes to pneumonia and other infections. G. H.'s lungs were negative for pathologic lesions, and the liver, kidneys, and spleen were not palpable. The sella turcica was normal. The basal metabolism was minus 5.

The eye symptoms which had developed in the interim between his sixth and sixteenth years were characteristic. Ophthalmological examination by Dr. Frank Smith revealed unusual eye grounds with ectopia lentis of both eyes; the fundi were difficult to see because of the dislocated lenses, and there was stretching suggesting myopia. This is a perfect picture of the signs of arachnodactyly, and the diagnosis was suggested by Dr. Frank Smith. Four of G. H.'s siblings were also found to have dislocated lenses.

While the findings here noted are undoubtedly those of arachnodactyly, G. H. at this second visit also had symptoms of lymphocytic meningitis—that form of meningitis characterized by an acute onset, a benign course, and a high lymphocyte count of the spinal fluid⁽⁸⁾. The onset of this second attack (which has been reported and discussed in a previous paper⁽⁹⁾) was accompanied by the typical symptoms and signs of headache, nausea and vomiting, nuchal rigidity, a positive Kernig's sign, a suggestive Babinski reaction, and a slight elevation of temperature.

8. Skogland, J. E.: Benign Lymphocytic Meningitis, Minnesota Med. 22:162 (July) 1939.

9. Barron, A. A.: Lymphocytic Meningitis, North Carolina M. J. 3:125 (March) 1942.

Superficial and deep reflexes were present, but the deep reflexes were of low amplitude. Spinal fluid examination revealed a leukocyte count of 996, with 80 per cent lymphocytes; there were no tubercle bacilli and the Wassermann reaction was negative. Instructions were given to make a search for the virus of Armstrong and Lillie¹⁰, which has been shown to be present in some cases of lymphocytic meningitis; but owing to an unfortunate misunderstanding the instructions were not carried out.

While the acute meningeal symptoms abated under treatment, this boy has had frequent recurrences of occipital and frontal headaches such as he had in the ten years between his acute attacks and previous to his first attack. These persistent signs of meningeal irritation are curiously inconsistent with the usual reports of the outcome of lymphocytic meningitis, and may suggest that this boy has a chronic disorder of the nervous system paralleling his chronic under-nourishment and poor development.

Etiology

The etiology of arachnodactyly is still in the realm of theory. The problem of finding one plausible explanation linking together undeveloped musculature, nervous disorders, ocular abnormalities, and elongated bony structure without pathological changes is not an easy one. Explanations for each separate and individual phenomenon may be found in persons not having arachnodactyly, but a theory which may plausibly link together the phenomena in the syndrome has not yet been found. There have been regrettably few autopsies reported.

Early theories suggested as possible causes mongolism and endocrine, metabolic, pituitary and parathyroid disturbances. In view of the familial occurrence it is now most generally accepted that the basis of abnormalities is laid in intra-uterine life, as a result of defects of the germ plasm, faulty closure of the neural tube (Passow), or toxic disturbances affecting the development of the mesoderm and even of the ectoderm.

Dr. Ida Mann¹¹ has postulated two ways in which the various factors may be linked. She points out that "various factors may

account for the linking of defects. In the first place, the defect may be in certain chromosomes. Since the chromosomes carry many genes mediating different characters in various tissues, it is to be expected that superficially unrelated characteristics may be found to be related by their genic position in the blastomeres. There is not evidence to lead us to suppose that mesodermal and ectodermal structures are segregated in different chromosomes." She points out that there is evidence that the same chromosomes may carry character for the eyes and for the extremities.

In this connection it might be interesting to note that Lloyd records that all his patients had dark hair, a fact which suggests that the genes affected were carried in the chromosomes mediating dark hair. On the other hand, with the exception of one German, all of Lloyd's patients were of Jewish or Italian parentage, which would account for the coloring and might only show us that arachnodactyly has a geographical or racial distribution.

Dr. Mann also points out that if the defect is not genic but is due to toxic or endocrine disturbances acting at a later date "there is nothing inherently improbable in such a condition affecting both mesodermal and ectodermal structures alike, since the action of toxins during development is specific, not for the toxin, not for a given tissue, but for the period of development at which it begins to act and for those structures which are undergoing most rapid differentiation."

Dr. Mann's two theories provide a plausible explanation of the linkage of the oft-recognized abnormalities, and of the neurological symptoms described in this paper.

Neurologic and Psychiatric Aspects of Arachnodactyly

The case of G. H. has unusual features which might suggest that arachnodactyly, in addition to its oft-noted effects upon the bony structures and the musculature, may involve to some extent the nervous system.

This is not an original suggestion, although the supporting facts are of a new type. In 1927 Moro¹² drew attention to what he believed to be a neurological type of the disease, in which hyperreflexia, foot clonus, nystagmus, and a positive Babinski

10. Armstrong, C. and Lillie, R. D.: Experimental Lymphocytic Chorio-Meningitis of Monkeys and Mice Produced by a Virus Encountered in Studies of the 1933 St. Louis Encephalitis Epidemic, Pub. Health Rep. 49:1019 (Aug. 31) 1934.

11. Mann, Ida: Personal communication to Burch.

12. Moro: Ueber die Neurologischen Form der Arachnodactyly München Med. Woch. 74:1071, 1927.

sign were present. His ideas met with criticism, and it was suggested that these signs were but the product of weakness and physical exhaustion. To this criticism he replied that although general weakness might conceivably bring about some of the symptoms, the positive Babinski could not be explained on this basis.

In the case of G. H., with a family background threaded through with arachnodactyly, it is difficult to escape the suggestion that his neurological ill-health, evinced by two attacks of acute lymphocytic meningitis, with chronic meningeal symptoms during the intervening ten year period, might be linked with the familial Marfan's syndrome.

There are a few reports of cases of arachnodactyly in which neurologic or psychiatric symptoms were recorded. J. D. Fahey⁽¹³⁾ described a case of arachnodactyly in a girl aged 15 who "came to the clinic because of frequent attacks of headache." (He does not elaborate this finding but proceeds to delineate the other characteristics which led to a diagnosis of arachnodactyly.) It is possible that the headache might have been the result of defective eyesight, but it should be noted that the patient had worn glasses since the age of 6 years, and there is no suggestion that the glasses were inadequate for her requirements.

Fahey reported a second case of arachnodactyly with possible neurological symptoms in a man aged 45, who "was seen because of pain in suboccipital region, loss of memory and spots before the eyes." Four years previously the patient had had a hemorrhage in the right retina, following which the vision had become defective on that side. He had had "intermittent pain from the right frontal to the occipital region"—a type of headache which resembles the chronic meningeal headache of G. H. In Fahey's case, the pains four years earlier might have been due solely to the eye involvement, but it is still open to question whether all headaches at later dates were due to visual defect alone, especially in view of the fact that the patient also complained of loss of memory.

Burch, in his review of 120 cases of arachnodactyly, states that the nervous system and mentality are not affected "as a general rule". Among his own 8 cases there was one—that of a boy aged 10—in which the ankle and knee jerks were absent on the right side

and sluggish on the left. The boy had had at the age of 3 years an attack of "doubtful" infantile paralysis, followed by chicken pox at 5 and measles at 9. "He did not talk until he was three."

In addition to these cases of arachnodactyly in which there may have been some neurological involvement, there have been reported cases associated with mental disorders. Pino, Cooper and Van Wien^(2c) reported a case in a boy of 8 years, and stated that "it was impossible to ascertain the vision in the usual way due to poor mentality." Psychological examination led to the conclusion that there was cerebral maldevelopment. The authors noted that although the boy was obviously defective mentally his mental reactions improved when he was fitted with glasses. The same authors reported a case of arachnodactyly in a boy aged 20, who had been "operated upon several times for meningeal adhesions to relieve epileptic attacks," and Stewart has reported a case in a male epileptic imbecile, aged 16, but with a mental age of 5 years. In the evaluation of these cases with apparent mental retardation it is always necessary to remember the handicap of poor eyesight to perceptive learning. Moore^(3a) reports "dramatic results" in improved school work when a boy with arachnodactyly was supplied with suitable glasses.

Probably the most interesting contribution to our knowledge concerning neurologic and psychiatric symptoms was provided by Lloyd in his second paper on this disease⁽⁶⁾, in which he added 9 cases to 5 previously reported. One patient, a boy of 15 years, the offspring of a marriage between a woman and her uncle, was "suspected of being mentally defective", and a second patient, a boy who grew to a height of 6 feet, 8½ inches, had "some indications of increased cerebral pressure." In this paper Lloyd states definitely that dislocation of the lense "had been found to be more frequent among young inmates of institutions for the feeble-minded" than in the general population. In such cases the skeletal defects may have been present, but have not always been mentioned.

This statement concerning the incidence of ectopia lentis in institutions for mental defectives suggests two possibilities. One is that many cases of arachnodactyly are unreported because they are hidden away in such institutions; and that these patients are more likely to have neurological symp-

13. Fahey, J. J.: Muscular and Skeletal Changes in Arachnodactyly, *Arch. Surg.* 39:741 (Nov.) 1939.

toms, similar to those of G. H. The other possibility is that not all patients with dislocated lenses in these institutions are actually mental defectives, but that some may be retarded in perceptive learning by defective vision (as in Moore's case^(3a)). If the symptoms of arachnodactyly are sought for and recognized, and the patient is examined by an ophthalmologist for displaced lenses, these cases might be removed from the ranks of the alleged feeble-minded. Certainly children who have difficulty in reading should have the advantage of a careful eye-ground examination.

Summary

The characteristics and etiology of arachnodactyly have been discussed and its occurrence in several members of a family group has been reported. The mother and six of her children showed the characteristic elongated bony structure. Four of the siblings had ectopia lentis. Of these four, one had a left lumbar scoliosis of the spine, while another, G. H., had had two acute attacks of lymphocytic meningitis and some chronic symptoms which might seem to indicate involvement of the central nervous system. There is no proof that this simultaneous occurrence of meningeal and arachnodactylous symptoms was a coincidence or that the two chronic conditions were linked in a close association. The case is recorded in the hope that it may add to the sum of knowledge concerning the possible lines of development of arachnodactyly.

An attempt is made to show the various orders in which symptoms may develop in different individuals. It is suggested that the pediatrician, the orthopedist and the ophthalmologist, in addition to the internist and the neuropsychiatrist, should be on the look-out for symptoms of arachnodactyly so that patients may not be unsatisfactorily treated for isolated clinical symptoms such as malnutrition, spinal curvature or apparent mental deficiency.

The writer gratefully acknowledges the constructive help of Dr. Frank C. Smith and Dr. William Allan, both of Charlotte, Dr. W. K. McGill of Clover, S. C., and Dr. L. A. Coleman of Spartanburg, S. C.

Routine collapse therapy of minimal pulmonary tuberculosis is not justified. Conservative therapy is the treatment of choice. From 75 to 80 per cent of the cases (studied) resolve or fibrose and become stable with bed-rest and remain well. I. D. Bobrowitz, M.D., Amer. Rev. of Tuber., Mar., 1942.

A NOTE ON SOME EXPERIMENTAL RESULTS SUGGESTING THE USE OF SODIUM PHENTETIOTHALEIN IN THE TREATMENT OF ENTERIC INFECTIONS OF BACILLARY ORIGIN

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The literature of the past two decades is replete with methods of treating the acute and chronic enteric infections of bacillary origin, particularly those of the typhoid-paratyphoid-dysentery group. All earlier attempts at specific therapy in the acute infections were unsatisfactory and offered no more than the usual supportive measures. In 1933 Browning⁽¹⁾ reviewed every method available of dealing with the chronic enteric carrier and considered them all inadequate.

The experimental work upon which this note is based was carried out in 1935. The results were then thought to have little significance and were not reported. Since that time, clinical evidence brought forth elsewhere seems to justify a brief presentation of this material for whatever value it may now possess.

Soluble iodophthalein was first used in the treatment of typhoid carriers by Onodera and his co-workers⁽²⁾ in 1931. Seven proven carriers were treated with one or two doses of this drug intravenously, followed by irradiation of the gallbladder. Three patients showed persistently negative stool, urine and bile drainage cultures during the next month, at the end of which time observation was terminated. Two patients had temporarily negative cultures and two were not affected. The authors declared that the drug was ineffectual in acute typhoid fever. Oral administration of the dye was also unavailing in their patients. They studied the sterilizing power of soluble iodophthalein on *Eberthella typhi in vitro*, and reported convincing results. Exposure to roentgen rays did not enhance the bactericidal quality of the dye

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1. Browning, C. H.: Chronic Enteric Carriers and Their Treatment, Medical Research Council, Special Report Series, No. 179, London, His Majesty's Stationery Office, 1933.
2. Onodera, N.; Murakawa, G.; and Liu, S.: Ueber eine neue Behandlung von Typhusbazillenträgern, Deutsches Arch. f. klin. Med. 171:503, 1931.

under these conditions. However, the authors considered irradiation of the gallbladder after administration of the dye to be necessary to a maximal bactericidal action. They emphasized the fact that at least a temporary sterilizing effect was always reflected in the stool cultures.

Saphir and Howell⁽³⁾ in 1940 gave soluble iodophthalein orally to 1 paratyphoid A carrier, whose stool cultures then became negative and remained so throughout a seven months' follow-up period. They considered oral administration of the drug more efficacious than intravenous administration, both for concentration in the gallbladder and for local action in the intestine. Their studies were supplemented by experiments in which a bile solution containing 4 to 6 per cent of the dye was shown to be bactericidal for *Salmonella paratyphi in vitro* after ten hours' contact. These results approximated those of Onodera and his co-workers, who found that a 4 per cent solution killed the organisms within twelve hours and a 6 per cent solution within three hours.

Enright in 1941⁽⁴⁾ treated a confirmed typhoid carrier with oral soluble iodophthalein and demonstrated an immediate disappearance of the pathogen from the stools. Later stool cultures were not reported.

New interest in the therapeutics of enteric fevers was aroused by the introduction of sulfonamide compounds. Marshall and others⁽⁵⁾ employed sulfaguanidine with promising effect in the management of bacillary dysentery in children. Rantz and Kirby⁽⁶⁾ likewise reported encouraging results with the same drug in dysentery carriers. Earlier, Levi and Willen⁽⁷⁾ had used sulfaguanidine with apparent success in a typhoid carrier. Cutting and Robson⁽⁸⁾, on the other hand, have recently disclaimed the efficiency of a great variety of agents in the treatment of typhoid carriers. Their investigations dealt with phenothiazine, pheno-

thiazone, thional, soluble iodophthalein, sulfanilamide, sulfathiazole, sulfadiazine and sulfaguanidine. Each of these drugs in a 0.1 per cent concentration failed to influence the growth of the typhoid organism *in vitro*. They also employed phenothiazine, thional, soluble iodophthalein, sulfadiazine and sulfaguanidine in the treatment of 6 typhoid carriers and 1 dysentery carrier without success.

At the moment, then, there is a confusing diversity and uncertainty of opinion regarding chemotherapeutic methods applicable to the enteric fevers. The following data are intended to be in no way controversial.

Experimental Data

Experiments were designed to test the bactericidal power of soluble iodophthalein and related compounds against *E. typhi in vitro* and to ascertain the bactericidal activity and quantity of the dye that could be concentrated in the gallbladder of an experimental animal. Four of the commercial halogen derivatives of phenolphthalein were selected—namely, the disodium salts of phenoltetrabromophthaleinsulfonate (brom-sulfalein), phenoltetrachlorophthalein, tetraiodophenolphthalein (soluble iodophthalein) and phenoltetraiodophthalein (sodium phen-tetiothalein). These compounds are fully described in NEW AND NONOFFICIAL REMEDIES, 1940. The solution strength of each drug tested was based upon average dosage and the estimated dilution of the drug in the hepatobiliary and intestinal tracts of man.

The bromine compound was shown to exert the least bactericidal effect of any of the dyes employed. The chlorine derivative, on the other hand, was found to be the most effective by a small margin, weight for weight, since a 1 per cent solution of the drug killed typhoid bacilli in less than an hour after contact. However, the toxicity of this compound invalidated its advantages. It was decided that only soluble iodophthalein and sodium phen-tetiothalein possessed any practical value as bactericides because they could be administered safely in large doses. The essential experimental data regarding these preparations are given below.

Tubes containing 5 cc. portions of sterile solutions of each dye in varying strengths were inoculated with 0.5 cc. of a twenty-four hour broth culture of *E. typhi* of known virulence, and were incubated at 38 C. A loopful of each inoculated solu-

3. Saphir, W., and Howell, K. M.: Soluble Iodophthalein in Treatment of Carriers of Typhoid-Paratyphoid Group, J. A. M. A. 114:1988, (May 18) 1940.

4. Enright, J. R.: Apparent Cure of a Typhoid Carrier with Soluble Iodophthalein, J. A. M. A. 116:220 (Jan. 18) 1941.

5. Marshall, E. K.; Bratton, A. C.; Edwards, L. B.; and Walker, E.: Sulfanilylguanidine in Treatment of Acute Bacillary Dysentery in Children, Bull. Johns Hopkins Hosp. 68:94 (Jan.) 1941.

6. Rantz, L. A., and Kirby, W. M. M.: The Use of Sulfaguanidine in the Treatment of Dysentery Carriers, J. A. M. A. 118:1265 (April 11) 1942.

7. Levi, J. E., and Willen, A.: The Typhoid Carrier State Treated With Sulfaguanidine, J. A. M. A. 116:2258 (May 17) 1941.

8. Cutting, W. C., and Robson, G. B.: The Alleged Efficiency of Medical Treatment of Typhoid Carriers, J. A. M. A. 118:1147 (April 25) 1942.

tion was then transferred into a tube of beef infusion broth (pH 7.4) at intervals up to twenty hours. These tubes were incubated at 38 C. for twenty-four hours and were then examined for growth. The results (growth indicated by X, no growth by —) were as follows:

Soluble iodophthalein in distilled water

	2%	4%	6%	7%	8%	Control
Hours of contact of organism with dye	1 X	X	X	X	X	X
	2 X	X	X	X	X	X
	3 X	X	—	—	—	X
	4 X	X	—	—	—	X
	5 X	X	—	—	—	X
	6 X	X	—	—	—	X
	20 X	X	—	—	—	X

Soluble iodophthalein in neutral ox bile

	2%	4%	6%	7%	8%	Control
Hours of contact of organism with dye	1 X	X	X	X	—	X
	2 X	X	—	—	—	X
	3 X	X	—	—	—	X
	4 X	X	—	—	—	X
	5 X	—	—	—	—	X
	6 X	—	—	—	—	X
	20 X	—	—	—	—	X

Sodium phentetiothalein in neutral ox bile

	1%	1.5%	2%	2.5%	3%	Control
Hours of contact of organism with dye	1 X	X	X	X	—	X
	2 X	—	—	—	—	X
	3 X	—	—	—	—	X
	4 X	—	—	—	—	X
	5 X	—	—	—	—	X
	6 X	—	—	—	—	X
	20 X	—	—	—	—	X

It was evident that the presence of ox bile increased the effectiveness of soluble iodophthalein against *E. typhi*. However, sodium phentetiothalein in neutral ox bile solution had a distinctly greater lethal effect.

An attempt was now made to determine the bactericidal power and concentration of sodium phentetiothalein as stored in the gallbladder of an experimental animal. Six rabbits and three cats were utilized in these procedures. Roentgenographic studies of dye concentration, however, soon revealed that the cat was superior to the rabbit for this purpose. Results were uniform; the following is representative:

A 4500 Gm. cat, starved for twenty-four hours prior to and throughout the experiment, was anesthetized with nembutal, and 1.5 cc. of a sterile 8 per cent solution of sodium phentetiothalein was injected into the femoral vein. Two more injections of 2 cc. each were given forty-eight and seventy-two hours later. At ninety-six hours, a roentgenogram showed the gallbladder well filled with dye. The cat was sacrificed and 2.5 cc. of bile were withdrawn from the gallbladder under aseptic precautions. The bile was yellowish brown and exhibited none of the characteristic purple color of phentetiothalein in solution. The dye had been decolorized by the acid reaction of the bile and was found to be incapable of killing typhoid bacilli *in vitro* even after seventy-two hours' contact. A 5 per cent aqueous solution of sodium phentetiothalein was prepared and treated with 0.1 normal hydrochloric acid until it was decolorized. The resulting material likewise failed to affect the growth of the organism.

The concentration of dye in the recovered bile was determined colorimetrically. One-half cubic centimeter of bile was cleared by adding lime water and allowing the mixture to stand. The supernatant fluid, now a deep purple, was withdrawn, filtered,

and diluted with 0.1 normal sodium hydroxide until 30,000 parts of the dilution represented one part of recovered bile. A standard was prepared by diluting one part of a 1 per cent aqueous solution of sodium phentetiothalein with 20,000 parts of 0.1 normal sodium hydroxide. The standard and unknown solutions matched closely at these ratios. The recovered bile, therefore, had contained decolorized dye in a concentration of approximately 1.5 per cent.

Discussion

The bacteriological results given above are comparable to those of Onodera and his co-workers, and Saphir and Howell in regard to soluble iodophthalein. However, sodium phentetiothalein is shown to be an even more effective bactericide for *E. typhi in vitro*. This might be due to the fact that the iodine content of sodium phentetiothalein lies between 56 and 59 per cent, while that of soluble iodophthalein is approximately 53 per cent. The clinical dose of both is the same (4 Gm. orally, or 40 mg. per kilogram of body weight intravenously). Weight for weight, sodium phentetiothalein is the less toxic of the two and is therefore tolerated in greater dosage. Both dyes dissolve readily in aqueous solution at a pH of 7 to 9. When the hydrogen ion concentration exceeds this limit, they are decolorized and form an insoluble, milky precipitate. In sufficiently strong solution, both destroy the typhoid organism; decolorized, they have no effect whatever.

The presence of bile definitely enhances the bactericidal effectiveness of soluble iodophthalein, in spite of the fact that bile is known to favor the growth of the typhoid organism. The reason for this is not clear. It is possible that bile has an oxidizing effect on the dye, liberating iodine, or that it plays some intermediate role in the reaction between dye and organism.

Sodium phentetiothalein is well concentrated in the gallbladder of the cat, although it is decolorized by the acid reaction of the bile and becomes innocuous to the typhoid bacillus. This fact may explain, in part, the variability of the results reported in the treatment of typhoid carriers with soluble iodophthalein.

It has been estimated that, by oral or intravenous administration, the dye may reach a concentration of 8 per cent in the normal human gallbladder. This amount should be more than adequate to sterilize gallbladder contents infected with *E. typhi*, provided the hydrogen ion concentration remains favor-

able and keeps the dye in solution. Whether such ideal conditions could obtain would certainly depend upon the functional capacities of the hepatobiliary system and intestine and upon the acid-base balance of the body as a whole.

In view of the fact that a degree of success has already been demonstrated in the use of soluble iodophthalein for the treatment of enteric carriers, a modified chemotherapeutic approach might be proposed in the light of data presented above. Sodium phentetiothalein, instead of soluble iodophthalein, would be the drug of choice. A combination of oral and intravenous administration probably should be most effective, with dosage repeated according to individual limits of intoxication. At the same time, an attempt could be made to keep the dye from being decolorized in the biliary tract and intestine by instituting a regimen of systemic alkalization. In certain cases, a solution of the drug might be introduced directly into the intestine through a duodenal tube. Intestinal and biliary stasis should be encouraged in order to prolong contact of organisms with dye and to counteract the drug's laxative effect. A low-residue, low-fat diet and small doses of camphorated tincture of opium could be employed to this end.

It is hoped that the foregoing statements may promote continued interest in the subject. Certainly an effort should be made to ascertain the efficacy of the dye administered to infected animals under the proposed conditions. The practicability of the suggested therapeutic plan, however, can be determined only by careful clinical trial in patients with acute enteric infections as well as in carriers.

Summary

1. Experimental data are presented to show that sodium phentetiothalein in neutral ox bile solution is bactericidal for *E. typhi* *in vitro* in higher dilutions than is soluble iodophthalein.
2. The presence of ox bile increases the effectiveness of soluble iodophthalein against *E. typhi* *in vitro*.
3. If a bactericidal solution of sodium phentetiothalein is acidified with dilute hydrochloric acid until decolorized, it is rendered innocuous to *E. typhi* *in vitro*.
4. Sodium phentetiothalein is concentrated in the gallbladder of the cat as

a decolorized compound. If converted into its soluble form, it is present in strength sufficient to kill *E. typhi* *in vitro*.

5. A modified method for the treatment of acute and chronic enteric infections of bacillary origin is proposed. This calls for the administration of sodium phentetiothalein orally and intravenously, with repetition of the dose within individual limits of intoxication, and with systemic alkalization and the encouragement of biliary and intestinal stasis.

The Significance of Names—As physicians, pay attention to words and names; they are of deeper significance than you might think. Not infrequently the name by which a disease is known carries within itself the seeds of gross errors of thought. "Exophthalmic goitre," for example, with its false implication that exophthalmos is of great importance in the syndrome of thyrotoxicosis; or "amebic dysentery," which completely overlooks the many instances of amebiasis, which develop liver abscess without any dysentery whatever; or, again "tropical sprue," which emphasizes latitude, a fact of little importance, instead of dietary habits, which are all-important.

Someone has pointed out that man is the only animal who creates gods; the medical species of *Homo sapiens* might be defined with fair accuracy as the animal who creates names! Many writers harbor the puerile notion that coining a new name, even a nonsensical name, advances in some mysterious way our knowledge of the disease. Take sprue, for example; it is variously referred to as Celiac Disease, Chronic Intestinal Indigestion, Psilosis, Gee-Herter Disease, Gee-Herter-Thaysen Disease, Hill Diarrhea, Idiopathic Steatorrhea, etc. It is true that the word "sprue," meaning "aphthous stomatitis," is inadequate, but it is unpretentious, has the sanctity of age and priority, and does not conceal ignorance behind such an empty, bombastic phrase as "Idiopathic steatorrhea." Regard with suspicion the man who seeks refuge in polysyllables; a thing clearly understood can always be expressed in simple terms.—Hanes, Frederic M.: *Meningococcus Infection*, Internat. Clin. v. 3, series 48, p. 261, 1938.

Psittacosis.—A few words should suffice to summarize the diagnosis and treatment of psittacosis. It is a typhoid-like illness with pneumonia, seen among families who have recently acquired new bird pets. We suggest further trial of sulfapyridine or other chemotherapy.—H. C. Hinshaw: *Psittacosis: Possible Response to Sulfapyridine*, *Proceedings of the Staff Meetings of the Mayo Clinic*, 15: 662 (October 16) 1940.

Depression.—When a patient is depressed and apparently exhausted without obvious cause, when two or three overhauls have failed to reveal any organic disease, and when one or more near-relatives have suffered with melancholia, the physician should begin to suspect that the trouble is a mild depression. — Walter C. Alvarez: *What's Wrong With the Patient Who Is Always Tired?*, *Minnesota Medicine*, 23:788 (November) 1940.

THE INHERITANCE OF CERTAIN VARIETIES OF MENTAL DEFECT

WILLIAM ALLAN, M. D.

and

SIDNEY L. HALPERIN

In contemplating the unconquered diseases that scourge the world, such as yellow fever and trachoma, we are accustomed to look forward to the discovery of cause and cure. But in examining the causal factors operative in the many varieties of mental deficiency we can hope at present only for prevention, since cure seems beyond the bounds of reasonable expectation in most instances. While the hereditary factor in mental defect has yet to be fully explored, recent research would indicate that the solution for at least a small part of this problem may lie in the field of genetics. Where mental deficiency is caused by the action of pathological genes present in one or both of the original cells, and may thus continue to be inherited from generation to generation, a knowledge of the mode of inheritance may throw considerable light upon the possibilities for the prevention of such defects in the population.

The congenital entity of *mongolism* has long been recognized, but its cause still remains unknown. The incidence of this condition in the population is not accurately known, but it has been estimated to occur more frequently than once in 10,000 of the population. This estimate may be five or even ten times too low, because many cases are not recognized and a high percentage of these children die before they reach puberty. It is likely that in the state of North Carolina there are more than 500 mongols, perhaps almost 1000.

Since mongolism is present at birth it has inspired careful genetic study, which has yielded very interesting results. It is significantly familial—that is, it may occur in more than one sibling; and it is found more frequently among relatives of the affected than chance occurrence would permit. The likelihood of a genetic etiology is further suggested in studies of twin mongols, which show that identical twin pairs are usually both affected. This is not the case among fraternal twins. On the whole, the evidence

is that some genetic factor, as yet unknown, is involved. Many genes are known whose expression may be incomplete or a matter of degree. The genetic factor in mongolism is an example of this type. Mongolism is also an excellent example of the subtle inter-relationship and interdependence of heredity and environment. Every trait or character, be it normal or pathological, is the product of the influences of variation in *both* heredity (nature) and environment (nurture). The evidence is unmistakable that lateness of childbearing is a significant environmental influence in mongolism. It is to be noted that it is the mother's age which is important, and not the number of children she has had. The father's age is not a factor. It has been shown that if childbearing were restricted to the period between 20 and 30 years of age, mongolism would occur at only one-fourth its present rate. Many physicians still regard mongolism as a defect in thyroid function, but recent studies⁽¹⁾ have indicated that this is not so.

The European physician Folling recently discovered⁽²⁾ that from 1 to 2 per cent of idiots in a certain institution for mental defectives excreted in their urine phenylpyruvic acid, which is a product of the incomplete oxidation of the protein constituent phenylalanine. Dr. L. Penrose of England, who was carrying on research into the causes of mental deficiency at the time, became interested in the problem. In studying the families of patients with this condition he soon discovered, to his surprise, that no mentally normal individual in such families excretes this abnormal metabolite. After making exhaustive studies, he found⁽³⁾ that about one-fourth of the siblings in such families are idiots and have the same metabolic abnormality. The condition is now known as *phenylketonuria*. It is due to the action of a single recessive gene, a fact which has been verified in our own country by Jervis⁽⁴⁾. Here is an abnormality in body metabolism which is caused by the action of a gene and which is associated with mental deficiency. Of added interest is the fact that

1. Benda, C. E. and Bixby, E. M.: Function of Thyroid and Pituitary in Mongolism, *Am. J. Dis. Child.* 58:1240 (Dec.) 1939.
2. Folling, A.: Ueber Ausscheidung von Phenylbrenztraubensäure in den Harn als Stoffwechselanomalie in Verbindung mit Imbezillität, *Ztschr. f. physiol. Chem.* 227:169, 1934.
3. Penrose, L. S.: Two Cases of Phenylpyruvic Amentia, *Lancet* 1:23 (Jan. 5) 1935.
4. Jervis, G. A.: Inherited Biochemical Alterations in Certain Types of Mental Deficiency, *Proc. Am. A. Meet. Deficiency* (no 2) 81:101, 1937.

Dr. Penrose has very recently been able to show⁽⁵⁾ that peripheral nerve tumors may be found in some of these cases.

A severe abnormality in lipid metabolism which is associated with mental deficiency is a condition called *gargoylism*. It was described as far back as 1908. Hunter in 1917 and Hurler in 1919 recognized this peculiar syndrome and regarded it as a new disease. In 1936 Ellis, Sheldon, and Capon⁽⁶⁾ reviewed the literature and presented a series of cases of their own. They suggested the name gargoylism. In 1937 Ashby, Stewart, and Watkin⁽⁷⁾ described the pathologic changes involved. They discovered that the neuropathologic lesions were strikingly similar to those found in juvenile amaurotic idiocy. In 1938 Kressler and Aegerter⁽⁸⁾ demonstrated widespread extracerebral deposits of lipid in some of the tissues they examined.

The clinical picture in gargoylism is characterized by abnormalities of the osseous system, congenital clouding of the corneas, abdominal distention with enlargement of the liver and spleen, and the presence of marked mental deficiency. A careful statistical analysis⁽⁹⁾ of the cases reported to date yields evidence that this condition is similarly due to the action of a pathological gene, recessively inherited. Thus it has again been possible, by means of genetic analysis, to throw light upon a syndrome in mental deficiency which until now was classed as "undifferentiated". Among the four other lipidoses which fit into the group of congenital disorders (Gaucher's disease, Schuller-Christian disease, Niemann-Pick disease, and Tay-Sachs disease) the familial incidence is rather high, and there is some evidence that these diseases may be similarly inherited. Tay-Sachs disease, or juvenile amaurotic idiocy, is known to be due to the action of a gene which is recessive. This condition is characterized by a history of progressive blindness with subsequent mental and physical deterioration. The incidence of this condition is about 4 per 100,000 births.

We have recently seen a patient with a

rare anomaly in development called *anhidrotic ectodermal dysplasia*, associated in this particular case with mental deficiency. In the majority of cases reported in the literature this condition, characterized chiefly by absence of sweat glands, a scarcity of hair growth on the scalp and in the axillary and pubic regions, and the presence of partial or total adentia, was accompanied by somewhat lowered mentality. Here is an ectodermal abnormality with a depressing effect upon the intellect—perhaps not so serious as in the conditions discussed above, but nevertheless a significant one. A gene frequency analysis⁽¹⁰⁾ disclosed that there is good evidence to substantiate an earlier hypothesis, based upon studies of family pedigrees, that the condition is inherited as a sex-linked recessive. It is passed on through the daughters of affected males to half of the grandsons.

Conclusions

From what has been said it is evident that a start has been made in breaking down the conglomerate mass of conditions, known today as mental deficiency, into component clinical entities with definite pathology. Genetics may play an important role in this process.

10. Halperin, S. L. and Curtis, G. M.: Anhidrotic Ectodermal Dysplasia Associated with Mental Deficiency. In Press.

Where poverty, bad housing, overcrowding, malnutrition and other bad environmental factors co-exist, as in Cyprus, tuberculosis need not assume serious proportions so long as massive infection is controlled. Per contra, experience at Saranac and Preston Hall shows that in communities where large numbers of open cases are congregated, but where there is no poverty, no bad housing, no overcrowding, no malnutrition—but where close watch is kept on families as a whole—healthy individuals nearly all escape.

The lesson is this: Infection and environment must be considered together and not separately as we have been wont to do. Infection itself is an environmental factor. Germs may lurk in dark, damp places but the darkest and dampest is the cavity in the lung which remains uncontrolled or uncollapsed, and all the public health measures in the world will not sanitize these, the most important source of infection. Infection being present, other environment factors must be brought up to a specified standard if massive infection is to be avoided. In Britain now . . . let us search out the sources of infection, many of them unknown, and eradicate them, not waiting for the interplay of other environmental factors which sooner or later will lead to the spread of disease. Editorial. *Lancet*, Jan. 24, 1942.

Employ your time improving yourself by other men's documents: So shall you come easily by what others have labored hard for.—Socrates.

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JULY, 1942

THE ATLANTIC CITY SESSION OF THE AMERICAN MEDICAL ASSOCIATION

Those who attended the ninety-third annual session of the American Medical Association did not need to be reminded that our country is at war. As soon as a guest was ushered into a hotel room his eye was caught by the largest notice on the door, giving elaborate directions for conduct during an air raid. Under the glass cover of the dresser was another notice, which read: "We have been notified by the Federal Government to instruct all our guests, that between the hours of *Sundown* and *Sunrise*, whenever *Lights* are needed in Guest Rooms and Bath Rooms, that *Shades Must be Drawn*. This is a Temporary Order to test a satisfactory *Dimout*. The Management." (Capitals and italics the Management's.) The usually glaring boardwalk was so dimmed that it was difficult to distinguish faces only a few feet away. The row of lights, along the ocean front were painted black except for an oval slit on the boardwalk side. The shops and places of amusement that were open had shades drawn, with the word "Open" just visible to the passerby.

Much of the scientific program and many of the scientific exhibits were given over to military medicine. The addresses of the officers, and much of the business of the House

of Delegates, dealt with the part the medical profession must play in the war. The chief speaker at the annual banquet of the Delegates and Officers, Mr. Paul McNutt, dealt none too gently with the urgent need for doctors.

In spite of the war, gasoline rationing, and the real hazard created by the target such a gathering offered to one of Hitler's submarines, the registration reached the gratifying mark of 8,238. North Carolina was well represented, with 96 registered. Only twelve other states had more in attendance. She was also well represented on the scientific program, with three presenting papers before section meetings, five discussing papers, and three taking part in scientific exhibits. North Carolina's own son, Fred Rankin, was installed as President at the opening General Session. His presidential address was excellent.

The Scientific Exhibit justified its reputation as the greatest postgraduate course in the world. The general scientific meetings and the programs of the section meetings attracted large numbers.

Our South American visitors appeared to enjoy every minute of the meeting, and entered into the various programs with gusto. It is to be hoped that the good neighbor policy of this meeting will be continued in the future.

The proceedings of the House of Delegates will be published in detail in the *Journal of the A.M.A.* The unanimous selection of Dr. James E. Paullin, distinguished internist of Atlanta, as President-Elect, met with general approbation, as did the selection of William J. Carrington of Atlantic City as Vice President. Dr. Carrington seems to be the perpetual chairman of the Committee on Arrangements for the Atlantic City sessions of the A.M.A. He is a member of the National Physicians' Committee, and one of the most popular members of the Association. The two speakers before the House of Delegates who perhaps were given the most applause were Dr. T. C. Routley, who represented the Canadian Medical Association, and Dr. Benvenuto R. Dino, of the Philippines. Both men spoke briefly but most effectively.

The Ninety-Third Annual Session was, in the words of an editorial in the *Journal of the A.M.A.* for June 20, "a triumph in its accomplishments, a tribute to the indomitable spirit of American Medicine."

MEDICAL EDUCATION AND THE WAR

Forty years ago there were one hundred and sixty-six medical schools in the United States, more than one hundred of which were infamous diploma mills which almost irreparably damaged the medical profession by filling it with incompetent men. The famous Flexner report of 1910 upon medical education decimated the dreadful schools, and kindly nature has gradually removed their product from the medical scene. During the past three decades the quality of medical education has steadily improved, until today one may say truthfully that in this type of education America leads the world.

The war has brought a new and subtle danger to medical education. Young graduates are denied more than one year of intern training, a restriction which is said to be a military necessity, and one, therefore, in which the profession gladly concurs, although recognizing it as a misfortune for the future of American medicine. Now, however, great pressure is being brought on the medical schools to strip their teaching staffs to the point where good medical training will become impossible, and this at a time when the schools have increased their enrollments materially, and are teaching continuously throughout the year.

This war will end, and, like all other wars, will influence very little the daily lives of the people.

"How little of all that human hearts endure

"Can kings or laws either cause or cure!"

Physicians will still be needed—good physicians—to help in the healing of the wounds of a sadly disillusioned world. In the hysteria which is inseparable from war, let us stand as a profession sufficiently aloof from the ever-mounting stream of suggestibility to insist that medicine be not subjected again to an influx of ill-trained and incompetent physicians. We must and will win the war, but unless clear judgment prevails, we may lose quite unnecessarily some of the irreplaceable needs of the peace that is to come.

NATIONAL PHYSICIANS' COMMITTEE APPROVED BY THE AMERICAN MEDICAL ASSOCIATION

Ever since the National Physicians' Committee for the Extension of Medical Care was created in 1939, the question of its relation to organized medicine, especially to the American Medical Association, has been repeatedly raised. Many have said that they would be willing to support it if they knew it had the full approval of the American Medical Association. At its recent meeting, the American Medical Association, through its House of Delegates, left no doubt of its approval of this Committee, by the adoption of the following resolutions:

WHEREAS, The physicians of the United States, through the American Medical Association, unselfishly have devoted time, energy and continuously greater ability to building an organizational structure truly nationwide in scope, serving every town, village and hamlet in this country and devoted to the vital task of providing a more effective and a more generally available medical service than is provided anywhere else in the world; and

WHEREAS, These efforts, over a period of nearly one hundred years, have developed American medicine to the point of a general recognition of its worldwide leadership; and

WHEREAS, This unparalleled growth and this unusual effectiveness are the results of the high level of educational requirements, the high standard of ethics that has been maintained and the continuous safeguarding of the relationship between the physician and the patient; and

WHEREAS, We are now passing through a period of worldwide revolutionary change in social, economic and philosophic concepts; and the general public has been and is subjected to a vast educational propaganda, some of which tends to discredit the American doctor and to destroy confidence in the effectiveness of American medicine and in our system of distributing medical care; and

WHEREAS, Preservation of the vital principles responsible for medicine's past progress, its present effectiveness and its ability to serve the public most advantageously make it essential that citizens understand the basic facts in connection with American medicine's methods, growth, achievements, the factors responsible for its superiority and the extent to which the people have been the beneficiaries of the profession's intensive and constructive efforts; therefore be it

Resolved, That we register our approval of the activities of the National Physicians' Committee for the Extension of Medical Service, commend the board of trustees and the management of that institution for the efforts they have made to enlighten the general public in connection with American medicine's methods, progress and achievements and in pointing out that the public has a vital interest in the final result; and be it further

Resolved, That it be declared the policy of this House of Delegates to encourage this effort and similar efforts with identical purposes.

IN DEFENSE OF MR. McNUTT

The after-dinner guest speaker of the House of Delegates on June 8 was the Honorable Paul V. McNutt. His subject was "The Urgent Need For Doctors." In this address he spoke very plainly, and his plain speaking has incurred some resentment. Before making up one's mind too quickly, however, one should read the address, which was given first place in the *Journal of the American Medical Association* for June 20. After a careful reading, whatever one's personal opinion of Mr. McNutt, it is hard not to admire his frankness in telling the representatives of organized medicine some unpleasant facts.

Mr. McNutt is not personally responsible for the fact that the army and navy are both desperately in need of doctors, in order to maintain the quota set by the powers that be. Neither is he responsible for the fact that, as Dr. Donnell Cobb points out in his President's Message this month, the medical profession will be expected to send one-third of its membership into service—a greater sacrifice than is demanded of any other group of men. Some months ago this JOURNAL ventured to suggest that the army was demanding a disproportionately large number of medical men as compared with the civilian population. No lack of patriotism was intended then, nor is it intended now, in raising the question again. The depletion of our ranks by one-third—and these the most able-bodied—will still further increase the gap between the civilian-physician and the soldier-physician ratios.

It is true that many doctors have been confused by the forms sent out from Colonel Seeley's office, and thought that they were applications for commissions. Certainly the impression was conveyed that filling them out and indicating one's preferences for service was equivalent to volunteering. When it is remembered that more than 130,000 of these forms have been returned to Colonel Seeley's office, and that this number represents roughly three fourths of the doctors in the United States, it seems unfair to term the medical profession slackers.

What was worrying Mr. McNutt was that these tentative offers to volunteer had not

been followed up by enough signatures on the dotted lines of real application blanks. He can hardly be blamed for looking at the record as it actually is, and noting that the army and navy are short of the actual number of doctors they need to fill out the quota. Very shortly letters will be sent out over Dr. Frank Lahey's signature to those doctors who signified their willingness to serve, who are suitable for service, and who have not yet joined the army or navy, urging that they apply at once for commissions.

The medical profession is the only group entrusted by the government with the responsibility of selecting its quota for military service. It is a tremendous order to send one third of our number—two thirds of those under 45—to the army and navy. It will mean adding 50 per cent to the load of every man left at home. Nevertheless, Mr. McNutt need not fear that the medical profession will betray its trust. Let us hope that neither he nor other officials of the Administration will forget two promises made the House of Delegates at Atlantic City. The first was that "All out" collaboration does not involve any theoretical assaults on, or support of, any theory of medical practice." The second promise was that if organized medicine does its duty in obtaining enough physicians for the army and navy, and at the same time allocates men to important positions in industry and in civilian life, "the profession should certainly have no fear of any drastic change in medical practice after the war."

* * * *

NORTH CAROLINA'S QUOTA REACHED

Just as the NORTH CAROLINA MEDICAL JOURNAL was ready to go to press, an important communication was received from Dr. Hubert Haywood, State Chairman of Procurement and Assignment of Physicians. General Coburn has just returned from Washington with the gratifying news that North Carolina is one of the first states in the Union to reach its 1942 quota of doctors for military and naval service. While anyone who feels the urge to volunteer may still do so, it is probable that Uncle Sam will not demand any more medical officers from North Carolina this year.

Much praise is due Dr. Haywood and his committee, as well as those medical men who have voluntarily left their practice and gone to the defense of the country.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL
WINSTON-SALEM

Presentation of Case

E. B., a 56 year old Negro woman, was admitted to the Kate Bitting Reynolds Memorial Hospital February 26, 1942, because of marked anasarca. Her chief complaint was "swelling all over".

Her present illness began gradually in August, 1941, when she noted swelling of her ankles which gradually progressed and extended upward. Her abdomen finally became swollen and her urinary output decreased. She also noticed progressive dyspnea. She was seen by the City Physician in November, at which time marked edema was noted on the dependent side, arm, leg and face, while the upper side was almost free of swelling. Urinalysis at that time showed a 4 plus reaction for albumin, but no formed elements. Treatment with ammonium chloride produced satisfactory diuresis and loss of edema. She was later given 3 cc. of mercupurin with even more improvement. She was then able to get out of bed for the first time in over a month. However, edema eventually progressed to a maximum extent, and the patient was orthopneic and bedridden when she was finally admitted to the hospital. There was no family history of heart or kidney disease, and no diabetes or other familial disorders. The parents died of unknown causes. The patient recalled having had only the childhood diseases and malaria. She had been in good health prior to her present illness. There was no history of venereal disease.

The physical examination, on admission, revealed a middle aged woman in moderate orthopnea, bloated with massive anasarca. Examination of the head, eyes, ears, nose and throat was essentially negative. The chest revealed signs of "some fluid in the bases". The heart was slightly enlarged to the left. There were no murmurs or arrhythmia. The abdominal examination elicited signs of ascites, and the liver edge was palpable.

The urinalysis on admission showed a specific gravity of 1.027 with 9 to 11 white

blood cells, occasional red blood cells, and 10 granular casts per high power field. The blood studies were omitted because of technical difficulties resultant from the massive edema.

Her course in the hospital was steadily downhill, and death occurred on the eighth hospital day. Treatment consisted of diuretin, ammonium chloride, 50 cc. of 50 per cent glucose, mercupurin 2.2 cc., digitalis, and hot packs. Fluids were limited; the output, however, remained lower than the intake. The urinalysis two days before death gave essentially the same findings as the previous one, except that hyalin, waxy and fatty casts were reported.

Discussion

DR. O. E. WRIGHT: The first thing that the average doctor would think of when he sees a patient orthopneic and edematous throughout is congestive heart failure. Of course, there are other conditions that cause generalized dropsy—among them, renal insufficiency, pressure from tumors, anemias, and constrictive pericarditis. This woman complained of "swelling all over". In November, 1941, her urine gave a 4 plus reaction for albumin. That points toward a kidney damage at that stage. She was given diuretin and the edema subsided to a great extent. Later it recurred, and ascites developed. The ascites alone could be caused by an obstruction to the portal circulation or by tumor pressure in the abdominal cavity. With a portal obstruction alone you would not get a generalized edema, however, and that was the symptom which was stressed when she first came in. The fact that she steadily grew worse and died in eight days leads me to believe that she had severe congestive heart failure associated with renal insufficiency. The two conditions are often seen together. With renal insufficiency there is increased blood pressure and cardiac failure in the end. I notice that the systolic pressure was down to 130 after her admission to the hospital, and I am assuming that an acute dilatation of the left ventricle had occurred, accounting for the systolic pressure drop. My diagnosis is chronic glomerular and tubular nephritis, producing the typical nephrotic syndrome, high albuminuria and massive edema with resulting circulatory failure. Cirrhosis of the liver probably accounts for some of the ascites.

Clinical Diagnosis

Nephrosis.

Dr. Wright's Diagnosis

Congestive heart failure resulting from glomerulo-tubular nephritis.

Gross Anatomical Diagnosis

Subacute glomerulo-nephritis.

Anasarca.

Pulmonary edema.

Hemorrhagic erosion of the gastric mucosa.

Infarct of the right kidney.

Myocardial infarction.

Intussusception of the small intestine.

Scar of the right thigh.

Pathological Findings

DR. T. T. FROST: The patient was tremendously water logged. Most of the fluid was in the tissues and there was not so much in the serous cavities. The heart was of normal size, weighing 275 Gm., and it showed a few small, fairly average, myocardial scars over the left ventricle, the largest probably 1 cm. in diameter and extending for a distance of 3 or 4 mm. into the muscle. The lungs were heavy and a dull purple-red in color, and there were a few areas of consolidation. The liver was somewhat enlarged, weighing 1075 Gm., and was somewhat pale from the cloudy swelling which was present. Hemorrhagic erosions were found in the stomach, and there was hyperplasia of the lymphoid tissue in the duodenum. The small intestine contained an intussusception which had evidently been present for a long time, because it could not be reduced. The intussusciens and intussusception were joined by fibrous adhesions. It was a chronic intussusception without any obstruction. There was no dilatation of the bowel above it.

The kidneys were a little bit larger than normal, weighing 400 Gm. together. In the right kidney there was an infarction which was due to a thrombus of one of the arteries. The kidneys had a smooth surface and were quite pale. Small cysts were also visible. The cortex was a little bit wider than normal. There was nothing suggestive of chronic glomerular nephritis except the small cysts. The section of kidney near the pelvis showed the tip of a papilla projecting into one of the calyces. There was marked dilatation of all the tubules, and the tubular

epithelium had disappeared. A small amount of inflammatory reaction was present. There were granular debris and casts in the tubules, and the glomeruli showed changes of subacute glomerular nephritis, fibrosis of the capsule, and fibrosis of the tufts with adhesions of the tufts to the capsule. In one glomerulus the tufts were markedly lobulated, thickened and adherent at one point to the capsule. The arterioles in the other kidney appeared normal. There was no thickening. Two of the glomeruli showed the changes of a subacute intracapillary glomerular nephritis, with increased cellulation, fibrosis of the tufts and adhesions to the capsule of Bowman. The aniline blue stain accentuated the fibrosis of the glomerular tufts and brought out hyalin casts in the tubules.

This woman had a mild subacute glomerular nephritis of the nephrotic type. The most outstanding change appearing through all the sections of the kidney was the increased atrophy of the tubular epithelium. The lungs showed edema and very little passive congestion. The heart showed a minor degree of myocardial fibrosis, a small area of fibrosis representing a healing infarct.

Intolerance to Diethylstilbestrol

Nausea and vomiting have been the most frequent side-effects following administration of Stilbestrol (diethylstilbestrol). A recent report (J. A. M. A., 119:400, May 30, 1942) points out that there is a definite relation between these symptoms and the nausea and vomiting of early pregnancy. If one will merely take the time to ask the prospective patient if she had nausea and vomiting with a previous pregnancy, it would serve as a warning to give not over 0.25 mg. daily as an initial dose. Desensitization may be accomplished by giving 0.1 mg. tablets once daily for five days, then increasing the dose gradually until the therapeutic level is reached. Diethylstilbestrol, Lilly (formerly known as Stilbestrol) is available in 0.1 mg. tablets, as well as in larger doses, for oral administration.

Summer Diarrhea in Babies

Casac (calcium caseinate), which is almost wholly a combination of protein and calcium, offers a quickly effective method of treating all types of diarrhea, both in bottle-fed and breast-fed infants. For the former, the carbohydrate is temporarily omitted from the 24-hour formula and replaced with 8 level tablespoonfuls of Casac. Within a day or two the diarrhea will usually be arrested, and carbohydrate in the form of Dextri-Maltose may safely be added to the formula and the Casac gradually eliminated. Three to six teaspoonfuls of a thin paste of Casac and water, given before each nursing, is well indicated for loose stools in breast-fed babies.

Please send for samples to Mead, Johnson & Company, Evansville, Indiana.

MEDICOLEGAL ABSTRACT

J. F. Owen, M. D., LL. B.
Raleigh

Drunkenness. When a person is too drunk to be capable of entertaining a premeditated design or deliberate premeditation to kill he is not guilty of murder in the first degree unless he entertained such intent when he drank.

Frequently doctors are called upon to appear as witnesses to help determine a defendant's capability to entertain criminal intent. The following case was selected in order to show the effect of intoxication as it relates to those charged with first degree murder. Ordinarily, of course, voluntary drunkenness or intoxication is not an excuse for crimes, but there are exceptions to this rule, and this case represents one which is fairly common. It should be noticed, however, in this particular instance that while the degree of the crime might be lessened by the fact that the accused was intoxicated at the time the crime was committed, he was not wholly absolved from blame.

The defendant was convicted in Superior Court of murder in the first degree, and appealed to the Supreme Court from a death sentence. The main exception was as follows: "The court failed to charge the jury that a person who commits a murder when so drunk as to be incapable of forming a deliberate and premeditated design to kill would not be guilty of murder in the first degree but murder in the second degree or a lesser degree of homicide."

By way of explanation it perhaps should be stated in this connection, that murder in the first degree is the killing of a human being willfully, deliberately, and with premeditation, or a homicide committed in the perpetration or attempt to perpetrate any arson, rape, robbery, burglary, or other felony.

The defendant's testimony was to the effect that he and the deceased, who were at the time of the alleged homicide roommates and bed fellows, bought a half gallon of whiskey on the afternoon of Friday, August 7, 1937, and that they went to their room about 10 or 10:30 o'clock that night, after having drunk some of the whiskey; that they drank more whiskey after reaching the room, and that he remembers nothing more that happened that night. His testimony is further to the effect that when he awoke early on the morning of August 8, he found his roommate beside him in bed, dead, with his head bloody; that he removed the body to another place in the room and left later in the day, because he feared that he would be suspected of the homicide; that he did not remember or have any knowledge whatsoever of how the deceased came to his death; that he did not know whether he shot or killed the deceased; and that he did not plan or intend to kill the deceased.

The Judge of the Superior Court charged the jury to the effect that if the defendant formed a fixed design to kill and then got drunk and executed such intent while in a drunken condition, he would be guilty of murder in the first degree. When the case came before the Supreme Court the Justice stated that while the instruction of the court was correct as far as it went, it was error for the court even in the absence of a request to fail to charge the jury that if the defendant did not form any previous design to kill, and killed while in such a drunken condition that he was incapable of premeditation and deliberation, he would not be guilty of murder in the first degree. There was some suggestion by the

State that the homicide was committed in the perpetration of a robbery and that the defendant was therefore guilty of murder in the first degree on this account, but the Supreme Court could see no proof that the crime was committed in perpetration or attempt to perpetrate a robbery. According to the record, there was no eye witness, and there was nothing in the alleged confession of the accused which related to robbery.

As was indicated above, error was found in the Judge's charge to the jury, and the case was returned to the Superior Court for a new trial.

(North Carolina Supreme Court, v. 217, p. 445. Decision rendered spring term, 1940.)

MILITARY MEDICINE

OFFICE OF CIVILIAN DEFENSE

DR. RANKIN RETIRES FROM MEDICAL
ADVISORY BOARD, OCD

Dr. Fred W. Rankin, Lexington, Kentucky, retired as a member of the Medical Advisory Board of the Office of Civilian Defense upon being called to active service in the Office of the Surgeon General of the Army. Dr. John T. O'Rourke, dean of the University of Louisville School of Dentistry, Louisville, Kentucky, has been designated to fill the vacancy on the Board.

Three important agencies—the Federal Security Agency, the Office of Civilian Defense, and the American Red Cross—have agreed upon plans to assist civilian victims of enemy action, in case of bombing.

Immediate responsibility for the care of persons injured as a result of enemy action is placed upon the Emergency Medical Service of the U. S. Citizen's Defense Corps. The Red Cross will assist in furnishing nurses aides, stretcher teams, ambulances, and supplementary equipment; it will not duplicate the work of the Emergency Medical Service.

APPOINTMENT OF A NURSE DEPUTY TO THE
CHIEF OF EMERGENCY MEDICAL SERVICE

In accordance with the recommendations contained in Medical Division Bulletin No. 1, the Medical Advisory Board of the local Emergency Medical Service includes a representative of the local nursing profession. Since this bulletin was issued, State and local nursing councils which include all nursing groups have been organized to provide for total nursing needs. Experience indicates that some one person must be assigned the responsibility for recruiting nurses for active duty with the Emergency Medical Service. Each State and local Chief of Emergency Medical Service should be urged to appoint a Nurse Deputy, and in selecting her he should consult the State or local nursing council. The Nurse Deputy must have organizing ability and be able to devote the time necessary for her important duties. If a nurse has been successfully carrying out the duties of a Nurse Deputy under some other title, a new appointment is not indicated.

The duties of the State Nurse Deputy are:

1. To assist the State Chief of Emergency Medical Service and the local Nurse Deputies in the State in mobilizing all members of the nursing profession for duty in the Emergency Medical Service during and after an enemy attack or other wartime disaster.

BULLETIN BOARD

PRESIDENT'S MESSAGE

As the War continues to go "not so well" for the Allied Nations, the responsibility and the duty of the medical profession seem to grow greater and to be brought into sharper focus.

The demand for doctors in the armed forces is great. Each new proposal for our army places it at a higher figure. An army of nine million will take approximately 6 per cent of our population. According to the present doctor-soldier ratio, it is estimated that one-third of all physicians (two-thirds under 45 years) will be needed for such an army. To take approximately 6 per cent of the general population for the armed forces and approximately 33 1/3 per cent of the doctors will greatly alter the proportion of doctors in civil life. Undoubtedly this will bring about hardships and will call for many readjustments.

Newspapers and periodicals are frequently calling attention to the approaching dearth of doctors in such a way as to instill fear and apprehension in the minds of the people, lest they find themselves unable to secure medical service in case of an emergency. Some county Procurement and Assignment committees are letting it be known publicly and in no uncertain terms that if they supply the number of physicians called for by their quota the remaining physicians will be utterly helpless in caring for the health of the community.

Let us bear in mind that the Procurement and Assignment Service was established at our own suggestion; that it is staffed by physicians and guided by physicians, and that ours is the only profession that has been given the opportunity to ration itself. Such a service should afford the fairest and most efficient means of dealing with this most complex matter. If we cannot perform this service for our country, for our patients, and for ourselves in a satisfactory manner, could other less interested persons do it better?

Let us bear in mind also that it may not be wise to frighten the civil population unnecessarily over the possible shortage of medical care. Dr. Griffith, in his President's Address, gave us some excellent suggestions as to ways in which our service can be used more efficiently. Unquestionably in the past

2. To aid the American Red Cross and the hospitals to carry through a full program of training of Nurses' Aides so that the depleted ranks of hospitals and public health nursing services may be assisted in carrying the heavy burden of wartime service in civilian hospitals and health departments, as well as in the casualty stations and first aid posts of the Emergency Medical Service.

3. To assist the State hospital officer and State Chief of Emergency Medical Service in the emergency assignment of private duty nurses, and of nurses from local and State hospitals and health agencies to base hospitals, if the need arises for the evacuation of patients from Casualty Receiving Hospitals of the coastal cities.

The duties of the local Nurse Deputy are:

1. To maintain an active file of available nurses, kept up to date by, at least, a monthly check-up. A copy of the complete file should be provided by the Nurse Deputy for the Chief of Emergency Medical Service. Duplicate cards should be on file at registries, hospitals or other suitable places for use in different parts of the community so that nurses may be secured for emergency duty in hospitals and casualty stations on short notice. In a large city, it is desirable to subdivide the duplicate file according to the districts or precincts in which nurses reside or work. In smaller towns or in rural districts only one file will be required.

2. In collaboration with the American Red Cross and the local Chief of Emergency Medical Service, to provide all nurses with a first aid course and instruction on gas protection and the care of chemical casualties.

3. To arrange with local agencies employing public health nurses, for home visits to (a) casualties slightly injured who have been allowed to return home without hospitalization; (b) convalescent patients discharged early from hospitals to make room for casualties; and to assist the local Chief of Emergency Medical Service to arrange for centralized reporting of the need for this nursing care in homes.

4. To assist the local chapter of the American Red Cross and the local hospitals to carry through a full program of training of Nurses' Aides for wartime service in civilian hospitals and health departments as well as in the casualty stations and first aid posts of the Emergency Medical Service.

This information should be transmitted to State Defense Councils and State Chiefs of Emergency Medical Service.

DECONTAMINATION OF EYES AFTER EXPOSURE TO LEWISITE

Reference is made to a news release under date of March 31, 1942, regarding the treatment of Lewisite burns of the eyes with hydrogen peroxide. Further carefully controlled work conducted by the National Research Council indicates hydrogen peroxide is entirely ineffective for treatment. Washing with large amounts of 2 per cent solution of sodium bicarbonate in water or with plain water is the most effective treatment and should be carried out as soon as possible after exposure.

This information should be transmitted to State Defense Councils and State Chiefs of Emergency Medical Service.

we have all too frequently squandered our services and our patients have, at times, used our services with a wasteful luxuriousness. Some county societies have already taken steps to organize better the services of the physicians remaining at home and to instruct the public how to utilize their services to a greater advantage and with greater economy.

By such means it is likely that all will have the necessary medical attention. To become unduly and prematurely concerned ourselves will only alarm our patients.

As a profession our first duty is to lend our every effort towards winning the War. Our second duty is to see that our people at home receive every possible medical care. Our third duty is to see to it that the physicians who are called into service can return to the same unhampered system of practice which they left.

There are now 8,000 alien physicians in the United States. North Carolina has always wished to be cared for by its own American doctors. Let us so organize ourselves and our work that we can continue to serve our people in the way they wish to be served. This is entirely the duty of each county society. It is earnestly hoped that we can discharge this duty in such a way that it will not be necessary to permit an influx of physicians who are alien to our country, to our state, to our way of life, and to our ideals and customs.

SECRETARY'S MESSAGE

July 20 is the dead-line!

We are aiming at the sky even if we hit a stump!

We are out to collect all dues for 1942. The following letter has been sent to each member whose dues have not been paid:

Dear Doctor:

Because we have no record of your 1942 dues having been paid, this reminder is sent with the suggestion that you send us your dues—\$8.00—through your County Secretary, *if you are in an organized county*, or direct, *if you are not*, so that your name may be included on the Roster of Fellows for 1942 which will appear in the August issue of the NORTH CAROLINA MEDICAL JOURNAL. All material for this issue of the JOURNAL must be in the hands of the printers *early* in July. I, therefore,

urge you to attend to this matter at once. Looking forward to the pleasure of placing your name on the Roster of Fellows for 1942, I am

Very truly yours,

(Signed)

Roscoe D. McMillan, M. D.

We are making an earnest effort to give every member an opportunity to pay his dues in order that his name may be on the Roster of Fellows which will appear in the August issue of the JOURNAL, along with the Transactions of the Charlotte meeting. The names of all members whose dues have not been paid by July 20 will be dropped from the JOURNAL mailing list. Of course, the August issue, giving the Proceedings of the 89th Annual Session, will be the most important issue of the year and I feel that no fellow who is interested in organized medicine in North Carolina will want to miss it.

The House of Delegates in Charlotte last month made a ruling that all members who are serving in the armed forces of the country will be exempt from payment of dues for the duration; any dues which have already been paid by men in service will be remitted. I have asked each county secretary to keep me informed throughout the year as their members leave for service. I regret that only a few have responded to my request. County Secretaries, please take notice! This is the only means I have of being officially notified as to the members who are serving with the armed forces and whose dues should be waived or remitted. The officers who attended the Presidents' and Secretaries' Breakfast in Charlotte have responded well. I am depending on each of you to keep me fully informed as your members leave to serve their country.

Remember—there are only a few days left to pay your dues.

For convenience and quick service, my address is:

Red Springs, N. C.

Box 232

In response to an inquiry to the State Department of Revenue regarding exemption from payment of State License Tax for doctors in military service, I have received a letter, from which I quote:

"I regret to advise that this matter has been discussed with the Attorney General and he advises that, under the law, there is no provision whereby relief may be

given. Persons continuing to practice their profession on and after June 1, are liable for the license tax levied under Section 109, of the Revenue Act.

"We are in sympathy with this cause and it is expected that the 1943 General Assembly will make some concession."

ROSCOE D. McMILLAN, M. D.
Secretary-Treasurer

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

The Bowman Gray School of Medicine began its second term on June 29, with 119 students registering. There are 50 students enrolled in the first year class, 36 in the second year class, and 33 in the third year class. Instruction in the third year of medicine is being offered for the first time.

* * *

At the meeting of the student body on June 29, announcement was made of the establishment of a \$500 fund for visiting lecturers to be known as the Nathalie Gray Bernard Lectureship. This lectureship will be established through voluntary contributions of the students and faculty, and the fund will be set aside for the purpose of bringing to the school each year a nationally-known lecturer in the field of science or medicine.

* * *

Dr. William A. Wolff begins his duties as Associate Professor of Biochemistry in charge of Chemical Pathology on July 1.

* * *

Dr. Robert B. Lawson has joined the medical staff of the Bowman Gray School of Medicine as Assistant Professor of Pediatrics, and has opened an office for the private practice of pediatrics in the Private Diagnostic Clinic of the North Carolina Baptist Hospital. For the past two years, Dr. Lawson has been pediatric consultant to the State Health Department engaged in the teaching of refresher courses in pediatrics at Duke Hospital.

* * *

Dr. Wingate M. Johnson, Professor of Clinical Medicine, was Secretary of the newly created Section on General Practice of the American Medical Association, which held its first sessions at the Atlantic City meeting.

* * *

Dr. Tinsley R. Harrison, Professor of Medicine, gave a paper on "Some Puzzling Aspects of Pain in the Chest" before the Section on General Practice of the American Medical Association. Dr. George T. Harrell, Associate Professor of Medicine, discussed a paper before the Section on Dermatology and Syphilology.

* * *

Dr. Howard H. Bradshaw, Professor of Surgery, spoke at Class Reunion Day at Jefferson Medical College on June 3. His subject was "Surgical Aspects of Carcinoma of the Cardiac End of the Stomach".

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The Josiah Macy, Jr. Foundation has renewed its grant to the Department of Pharmacology in continued support of Dr. W. deB. MacNider's study of the Ageing Process.

* * *

Under the accelerated program for medical education the Medical School opened its session for 1942-43 on June 15 with a total enrollment of ninety-one students. Forty-two are in the second year class and forty-nine in the first year class.

* * *

Mr. J. Reece Blair, formerly an instructor in Physiology and Biological Chemistry at the Alabama School of Medicine, has been appointed instructor in Physiology to replace partially Dr. H. D. Bruner, on leave of absence in government service.

* * *

The Department of Public Health Nursing, the newest development in the School of Public Health at the University of North Carolina, has recently received national recognition by being accredited by the National Organization for Public Health Nursing. It is now one of the twenty-seven approved programs of study in public health nursing for graduate nurses in universities throughout the United States and is therefore in the top rank of professional education for the expanding field of public health.

During the first year fifty-seven graduate nurses have been enrolled, and at Commencement seventeen received Certificates in Public Health Nursing and three the Bachelor of Science degree in Public Health Nursing.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Our vital statistics in general have been extremely gratifying during this first year of our actual participation in hostilities. So far there have been 12,792 deaths in North Carolina in 1942, which is 1,632 fewer than occurred during the first five months of 1941.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Walter S. Page, Jr., State Field Worker, resigned his position with the North Carolina Tuberculosis Association on May 15 and will volunteer his services to the Armed Forces.

The following persons from North Carolina attended the Annual Meeting of the National Tuberculosis Association in Philadelphia:

Dr. P. P. McCain, Sanatorium
Dr. Paul Ringer, Asheville
Dr. A. L. Ormond, Black Mountain
Dr. H. L. Seay, Huntersville
Dr. David T. Smith, Duke University
Dr. M. D. Bonner, Jamestown
Dr. R. L. Carlton, Winston-Salem
Frank W. Webster, Raleigh

The theme of this year's meeting was—"Tuberculosis Work in a World at War". Dr. J. Burns Amerson, Jr., of New York City, was elected president of the National Tuberculosis Association and Dr. Lewis J. Moorman of Oklahoma City, President-elect. Dr. Henry C. Sweany of Chicago was made president of the American Trudeau Society and Arthur J. Strawson of Boston was elected the president of the National Conference of Tuberculosis Secretaries. Mrs. Ashley Halsey of Charleston, S. C. was made Vice President of this group.

ALAMANCE-CASWELL COUNTIES MEDICAL SOCIETY

The Alamance-Caswell Counties Medical Society met on June 9 and elected a new President and Vice President for the remainder of the year. Dr. W. W. Tyson, former President, is now in military service, and Dr. W. E. Cooke, former Vice President, has developed tuberculosis and has had to give up his practice. Dr. F. T. Harper of Graham was elected President, and Dr. J. B. Walker of Burlington Vice President.

Mr. Alvis Rich, local undertaker, showed two movie films: "Autopsy Technique" and "Autopsy Embalming Technique".

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Society held its first dinner meeting of the year on June 22 at the S. and W. Cafeteria. Members of the medical faculty of the University of Georgia were guest speakers. Dr. Richard Torpin, Professor of Obstetrics and Gynecology, spoke on "Roentgenpelvimetry in Labor"; Dr. Robert B. Greenblatt, Professor of Experimental Medicine, spoke on "Pellet Implantation in Endocrine Disorders"; and Dr. Perry P. Volpito, Professor of Anesthesia, gave a talk on the "General Use of Barbiturates".

DAVIDSON COUNTY MEDICAL SOCIETY

The Davidson County Medical Society held its regular dinner meeting at the Municipal Country Club in Lexington on June 3. Reports were given by the delegates to the State Convention and by the President and Secretary of the Society. Dr. Coy C. Carpenter, Dean of the Bowman Gray School of Medicine of Wake Forest College, discussed "Medical Education".

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society met at the City Memorial Hospital in Winston-Salem on June 9. Dr. L. A. Andrew, Jr., and Dr. C. N. Adams discussed "Male and Female Sterility".

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society held its regular monthly meeting in Greensboro at the O'Henry Hotel on June 4. The guest speaker was Dr. Henry P. Wagener of the Section on Ophthalmology of the Mayo Clinic. His topic was "Ophthalmoscopy as an Aid to General Medical Diagnosis".

POLK COUNTY MEDICAL SOCIETY

The Polk County Medical Society met in Troy at St. Luke's Hospital on June 9. Dr. M. C. Palmer, delegate to the State Medical Society, reported on the Charlotte meeting, and the local situation was discussed. One of the five active members of the Society left for military service on June 15.

SOUTHERN PEDIATRIC SEMINAR

The 22nd Annual Session of the Southern Pediatric Seminar will be held at Saluda, North Carolina, July 20-August 1. Dr. Samuel F. Ravenel of Greensboro is Dean, Dr. Frank Howard Richardson of Black Mountain Vice-Dean, and Dr. D. L. Smith, Saluda, is Registrar. Dr. Oren Moore of Charlotte is Dean of Obstetrics, and the obstetrical division has been enlarged.

NEWS NOTES

North Carolina physicians appearing on the program of the Ninety-Third Annual Session of the American Medical Association, held in Atlantic City June 8-12, were Edwin P. Alvey of Durham, Tinsley R. Harrison of Winston-Salem, and Julian M. Ruffin of Durham, who presented papers before various section meetings; and Lenox D. Baker of Durham, J. Lamar Callaway of Durham, Worth B. Daniels of Fort Bragg, George T. Harrell of Winston-Salem, and Wingate M. Johnson of Winston-Salem, who were discussants of papers. Drs. Deryl Hart and Samuel E. Upchurch of Durham presented a scientific exhibit in the Section on Surgery, and Dr. Harry Winkler of Charlotte was one of the demonstrators who assisted in the special exhibit on fractures. Dr. Wingate M. Johnson of Winston-Salem was Secretary of the Section on General Practice.

* * * *

Among the doctors from North Carolina registered at the American Medical Association meeting in Atlantic City were the following:

Allen, Charles I., Wadesboro
Anderson, William Banks, Durham
Baker, Lenox D., Durham
Bass, H. Hartwell, Jr., Henderson
Bass, Spencer P., Tarboro
Bell, Orville E., Winton
Billings, G. M., Morganton
Bizzell, Thomas Malcolm, Goldsboro
Bradshaw, Howard Holt, Winston-Salem
Brockmann, H. L., High Point
Bulluck, Ernest S., Wilmington
Caldwell, Lawrence M., Newton
Callaway, J. Lamar, Durham
Carr, Eugene M., Asheville
Carrington, George L., Burlington
Carter, Frances Bayard, Durham
Christian, Thomas B., Raleigh
Clayton, Milton B., Statesville
Clement, Edward B., Salisbury
Cocke, C. H., Asheville
Combs, Fielding C., Winston-Salem
Cooke, Q. E., Murfreesboro
Cooley, Samuel S., Black Mountain
Crisp, Sellers M., Greenville
Dale, Grover C., Goldsboro
Daniels, Worth B., Fort Bragg
Davenport, Carlton A., Hertford
Davison, Wilburt C., Durham
Dees, Ralph E., Greensboro
Edwards, B. O., Asheville
Fearrington, J. C. Pass, Winston-Salem
Fike, Ralph L., Wilson
Franklin, Robert Benjamin, Clinton
Frizzelle, M. T., Ayden
Gold, Benjamin, Shelby
Graham, William A., Durham
Griffin, M. A., Asheville
Grouch, A. McR., Wilmington
Hackler, Robert Hardin, Jr., Washington
Hamblen, Edwin C., Durham
Harrell, George T., Winston-Salem
Harrison, Tinsley R., Winston-Salem
Hart, Deryl, Durham
Hicks, V. M., Raleigh
James, Arthur A., Jr., Sanford
Johnson, Walter R., Asheville
Johnson, Wingate M., Winston-Salem
Kelly, Luther W., Charlotte
Kendall, Ben H., Shelby

AUXILIARY

A MESSAGE FROM THE PRESIDENT

With the advent of war and its attendant changes in the life of our nation comes a new perspective, a new philosophy, of service and sacrifice. Vacations are little spoken of, and busy minds and busy hands are learning to be prepared for constructive efforts in the multiple tasks that lie ahead.

We are aware that as women of this nation we must qualify ourselves to take our places where we are best fitted to serve. As the wives of doctors we have a definite commitment in the program of Medical Defense. Our husbands will be burdened with added responsibilities, and whatever demands are upon us, our first duty is to them and to the Medical Profession. We as an Auxiliary must incorporate into our program such projects as will be most effective in these times. It is both sobering and challenging to realize this obligation. In the mass of appeals that beset us every day for the use of our time and energy, let us resolve to discriminate carefully as to the ones that are most valuable.

Our national leaders of the Medical Auxiliary have worked out a formidable program for the State Auxiliaries. We are urged by our National President to become leaders in the community health program by:

1. Enlisting our services in the many branches of defense work;
2. Showing what scientific medicine is doing for public health and welfare;
3. Education against the danger of cults and charlatanism;
4. Education in the community control of the practice of medicine;
5. Educational crusades against falsely premised legislation;
6. Education to have all opinions emanate from the medical profession, which combines life-giving, and life-saving knowledge with unstinting labor. There is no rational control otherwise.

Is there a doctor's wife in North Carolina who would not give her best efforts to the furtherance of these ideals? It has been said, "Women know how to get things done." When there is something to be accomplished we know that leaders are needed. There are many such women, the wives of men of the Medical Profession, who are highly trained and well equipped to serve in capacities of

- Lancaster, William J., Wilmington
Lane, Bessie Evans, Raleigh
Lapsley, A. Fraser, Badin
Leinbach, Robert Frederic, Charlotte
Lock, Frank R., Winston-Salem
McCutcheon, W. Benson, Durham
McElwce, Ross S., Statesville
McLeod, John P. U., Marshville
McMillan, Robert L., Winston-Salem
McNeill, James H., North Wilkesboro
McPherson, S. D., Durham
Massey, Charles C., Charlotte
Monk, H. L., Salisbury
Monroe, Lance T., Kannapolis
Noel, William W., Henderson
Norris, Francis L., Beulaville
Northcutt, Eugene E., Hatteras
Northington, James M., Charlotte
Outland, Robert B., Rich Square
Owens, Z. D., Elizabeth City
Padgett, Philip G., Kings Mountain
Persons, Elbert T., Durham
Phillips, E. N., North Wilkesboro
Rainey, William T., Fayetteville
Richie, Richard F., Raleigh
Robinson, John D., Wallace
Rude, Joe C., Durham
Sharpe, Frank A., Greensboro
Shaver, W. T., Albemarle
Sigman, F. G., Spencer
Sisk, Wilfred N., Asheville
Smith, David T., Durham
Spoon, S. C., Jr., Burlington
Sprunt, Douglas H., Durham
Tayloe, John C., Washington
Thacker, Edgar A., Goldsboro
Thomas, Wilbur Clyde, Winston-Salem
Tice, Walter T., High Point
Tuggle, Allan, Charlotte
Tuttle, Marler Slate, Kannapolis
Valk, A. de T., Winston-Salem
Walton, C. L., Glen Alpine
Westcott, William E., Asheville
Whitehead, Seba L., Asheville
Winkler, Harry, Charlotte

* * * *

Dr. C. H. Cocke of Asheville was elected Vice President of the American College of Physicians at its annual meeting, and was presented with a gavel in recognition of his services as Chairman of the Board of Governors from 1935 to 1942.

* * * *

Dr. Otto Billig of Asheville has been elected a member of the American Psychiatric Association.

* * * *

Dr. William St. J. Jervoy of Tryon reported for active service in the United States Army on June 15.

* * * *

Dr. Roy Bunts of Asheville has received a commission in the Navy, and Dr. John Dougherty in the Army.

* * * *

Dr. D. H. Nisbet, who has recently moved from Charlotte to Atlantic Beach, is there for the summer only. He plans to resume practice in Charlotte in January.

leadership, yet who are not members of our organization. Every element in the life of our Auxiliary can be gauged by the enthusiasm of its leaders. Enthusiasm can be taught and caught. May I urge that each member spread this enthusiasm throughout the coming year? We shall find many responsive souls, who will also catch the glint of fellowship and comradeship in working together.

In our program of varied activities we can find interests best suited to our ability. Every one among us is fitted to do some particular thing better than another. There is a place waiting for each one of us. What will you do to make our Auxiliary stronger, our service greater?

Mrs. Sidney Smith, chairman of organization and immediate past president, is formulating plans with her ten councilors for expanded organization. Through her capable leadership of the past year, six new auxiliaries were added to our list, and we believe that this year will bring even greater results.

Through instructive programs we shall gain information pertaining to Health Defense and other Auxiliary projects, both nationally and in the state. Much valuable information may be found in the following publications: *Hygeia*, the *Bulletin of the National Auxiliary*, *Handbook for the State Auxiliaries*, the editorial and auxiliary pages of the NORTH CAROLINA MEDICAL JOURNAL, the *Journal of the American Medical Association*, and the *Transactions of the State and National Auxiliaries*. The program chairman has compiled a list of speakers who have consented to address our Auxiliary on subjects of special interest.

Let us keep on the alert and acquaint the public with matters concerning medical legislation and public relations. It has been said, "Freedom of speech and freedom of the press is a privilege, but self-restraint is a virtue." Therefore let us be well informed on these matters so that we may be able, judiciously, to discuss them. In the various groups to which we belong we may be able, by an opportune word or impetus of thought in the right direction to mold a sentiment favorable to sound legislative enactments.

Our State Auxiliary philanthropies deserve our heartiest support. We shall en-

deavor to give our best efforts to the McCain Bed and Endowment Fund, the Stevens Bed Fund, and the Student Loan Fund. During the year we have been privileged through the McCain Bed Fund to care for three young women, who are now recovered and back in active service, and one young doctor who is very much improved. The Stevens Bed Fund took care of two patients, one a doctor and one a nurse, both of whom are now back on active duty; another nurse has recently been admitted. This June we were happy to have one of our Student Loan Fund boys graduate in engineering at State College, and another boy graduate in medicine at George Washington University.

Through our affiliation with the Southern Medical Auxiliary we shall continue our contributions to the Jane Todd Crawford Memorial Fund. Our State Research Chairman will compile information on an eminent North Carolinian of the Medical Profession, to be contributed to the Southern Medical Lending Library.

The Board of Directors of the Auxiliary has created a new state chairmanship to be known as "Doctors' Day." We hope that each County Auxiliary president will appoint a corresponding chairman in her respective unit. In this way we may work toward a larger and fuller program, honoring the doctors on National Doctors' Day, March 30.

It would be difficult to estimate the time and effort spent in the work of National Defense. Some of the Auxiliary and individual activities are Red Cross classes, Civilian Defense, contribution to the Medical and Surgical Relief Committees of America, assisting in the selling of Defense Stamps and Bonds, the establishment of blood and plasma banks, health defense through Cancer Control and Tuberculosis Campaigns. Let us continue to work with renewed zeal, wherever we find work to be done.

We cannot deny that these are troublous and momentous times for all of us. We live in a world seemingly bent on death. Yet the influence of the One who said, "I came that they might have life, and that they might have it more abundantly," is still abroad in our land. May we, the wives of doctors, the ministers of healing, exert our influence to keep this spirit alive.

MRS. R. A. MOORE,
President

BOOK REVIEWS

Methods of Treatment. By Logan Clendening, M.D., Clinical Professor of Medicine, University of Kansas; and Edward H. Hashinger, M.D., Clinical Professor of Medicine, University of Kansas, with chapters on special subjects by various authors. Ed. 7. 997 pages, 138 illustrations. Price, \$10.00. St. Louis: The C. V. Mosby Company, 1941.

In this new edition Dr. Clendening has been joined by Dr. Hashinger as co-author, and by a group of his associates who have contributed chapters on special subjects. The new drugs which have won a place in medicine are included in this revision. This book is characterized by the pungent, clear style and virility of expression for which the senior author is noted. It is replete with interesting literary and historical comments. Although it is not encyclopedic in content, all the important methods of treatment used by the general practitioner are included. Physical methods of therapy and a discussion of psychotherapy are included, but the treatment of the latter is rather sketchy. The poorest section of the book, in the reviewer's opinion, are the chapters dealing with endocrine products. These are Chapter V, entitled "Extracts of the Ductless Glands", and Chapter XXII, on "Diseases of the Ductless Glands". The contents of these two chapters scarcely harmonize. For example, the use of salt and cortical extracts for Addison's disease are described in Chapter V but are ignored in Chapter XXII, where epinephrine, which in the reviewer's opinion is not only useless in this condition, but actually harmful, is described. The outmoded "Muirhead" treatment is still given space. In spite of these criticisms the book should prove both pleasant and instructive reading for the general practitioner.

Internal Medicine in Old Age. By Albert Mueller-Deham, Associate Visiting Physician, Welfare Hospital for Chronic Disease, Department of Hospitals, New York City; formerly Clinical Professor of Internal Medicine, University of Vienna Medical School, and Chief of Medical Division, Municipal Hospital for Chronic Disease, Vienna; and S. Milton Rabson, M.D., Assistant Professor of Pathology, New York Post-Graduate Medical School, Columbia University; Lt. Commander U. S. Naval Reserve. 395 pages. Price, \$5.00. Baltimore: Williams and Wilkins Co., 1942.

The present volume is another in the series which have resulted from the recently increased interest in geriatrics, the study of old age. The book is a collaboration of a clinician of wide experience in the study of chronic disease in the aged with a pathologist interested in the abnormalities associated with senility. The book summarizes in a clear and lucid manner the intricacies of diagnosis and treatment of all the common and rarer disorders which are encountered in the aged. The complications induced in disease processes by the ravages of age frequently confuse the clinical picture as it presents itself to the physician. Because of its emphasis on these diagnostic features and complications as well as on the oft-times difficult problems of therapy, the present book can be read with profit by the general practitioner who is faced with an increasing proportion of old persons among his patients.

Clinical Parasitology. By David L. Belding, M.D., Professor of Bacteriology and Experimental Pathology, Boston University School of Medicine; Member of staff of Evans Memorial, Massachusetts Memorial Hospitals. 888 pages, illustrated. New York, London: D. Appleton-Century Company, 1942.

This excellent text has been written from the standpoint of the medical man rather than of the zoologist. Extensive use is made of diagrams to illustrate the relationship between the different parasitic forms, intermediate hosts, and the transmission to human beings. Excellent photographs of major pathologic changes in the diseases in human beings are included. Pathogenesis, diagnosis, prognosis and treatment are included for the more important diseases; special emphasis has been placed on prevention of parasitic diseases. Seventy pages of technical methods are included as a separate section. References are included after each chapter, and there is a general bibliography at the end. This subject should assume increasing importance in view of the anticipated increase in such diseases on the return of military forces from widely scattered parts of the globe; this volume will serve admirably to refresh recent graduates or to instruct older physicians who did not have the subject included in their curriculum.

Diseases of the Skin. By Frank Crozer Knowles, M.D., Assistant Professor of Dermatology, Jefferson Medical College; Edward F. Corson, M.D., Clinical Professor of Dermatology, Jefferson Medical College; and Henry B. Decker, M.D., Professor of Dermatology, Jefferson Medical College. Ed. 4, revised, with 272 illustrations. 621 pages. Price, \$7.00. Philadelphia: Lea and Febiger, 1942.

The present volume is a revision of earlier editions by the senior author. It considers the conventional diseases encountered in dermatologic practice, with sections on synonyms, definition, symptoms, etiology, pathology, diagnosis, prognosis and treatment. The book is amply illustrated, but unfortunately it is difficult to portray adequately skin lesions by the ordinary black and white illustrations. The use of modern color photographs would have added greatly to the value of the book. In spite of this drawback the book will be of value for its clear, concise and orderly description of the skin lesions which the general practitioner is apt to encounter.

Bacteriology Laboratory Technique. By E. S. King, M.D., Professor of Bacteriology, Bowman Gray School of Medicine of Wake Forest College. 172 pages. Price, \$2.50. Charlotte: Charlotte Medical Press, 1941.

This volume admirably fulfills the promise made in the preface: "It sets forth in orderly sequence those technics and procedures essential in the training of students for the practice of medicine." It is also a valuable handy reference for those practitioners of medicine—who should continue to be students—who want to refresh their memories on laboratory technique. The directions given for the various procedures used in bacteriology are very clear and explicit.

Unfortunate features of the book are the number of typographical errors that were allowed to creep into it, and the incompleteness of the index. Doubtless these will be corrected in future editions.

Electrotherapy and Light Therapy With the Essentials of Hydrotherapy and Mechano-therapy. By Richard Kovacs, M.D., Professor of Physical Therapy, New York Polyclinic Medical School and Hospital. Ed. 4. 735 pp., illustrated with 314 engravings and a color plate. Price, \$8.00. Philadelphia: Lea and Febiger, 1942.

Physical therapeutics has attained the rank of an important medical specialty. Advances in physics have placed in the hand of the physician apparatus with which electrical and radiant energy may be applied to the tissues with effects which frequently surpass those attainable by the use of drugs. Dr. Kovacs, in the present revised edition of his book, discusses exhaustively yet clearly the physics of electric and radiant energy and the application of these forces in the diagnosis and treatment of disease. Hydrotherapy and the various other forms of physical therapy are also discussed in detail. The book can be recommended not only as an essential for the specialist in physiotherapy but also to the general internist and surgeon, who will find a multitude of measures described which are applicable to his own patients.

A Manual of Endocrine Therapy. By Bernard L. Cinberg, M.D., Lecturer in Obstetrics, New York Polyclinic Medical School and Hospital. 178 pages. Price, \$3.25. Brooklyn: Chemical Publishing Co., Inc., 1942.

This brief manual was intended as a compendium on the practical aspects of endocrinology. It considers seriatim the various hormones and conditions in which their use has been advocated. Although manifesting a higher degree of discrimination and critique than are found in the average textbook of clinical endocrinology, the book cannot be recommended for the use of the general practitioner. It is impossible to specify certain hormones for a given symptom. Intelligent use of endocrine products requires more than a tabulation of diseases, symptoms and dosages. There is no short cut to good practice in endocrinology, and until the general practitioner appreciates the need for fundamental sound knowledge in this field and ceases to depend on commercial advertisements or brief compendia for his information, practice in this field must remain on a poor level.

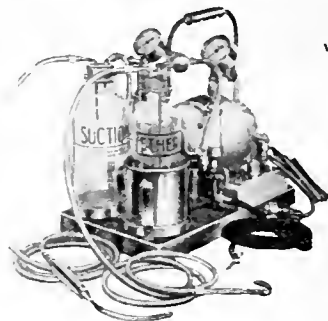
Rabies. By Leslie T. Webster, M.D., The Rockefeller Institute for Medical Research, New York. 168 pages, illustrated. Price, \$1.75. New York: The Macmillan Company, 1942.

This small volume has been written by a research man to give information primarily to the laity and secondarily to physicians and public health officials on a subject about which rumor, speculation and folklore have obscured facts. The pertinent literature has been examined and a bibliography is included. The appendix is composed of excerpts from the sanitary code of New York City and the State of New Jersey covering the confinement, disposal, and licensing of dogs.

Acknowledgment of Diabetes.—Diabetes should be acknowledged by those who have it. It is not a disease to be ashamed of unless one has been informed that he or she is hereditarily disposed and yet has become fat. One in four of all the people in the country has a diabetic relative.—Elliott P. Joslin: Diabetic Hazards, New England J. Med. 224: 690 (April 3) 1941.

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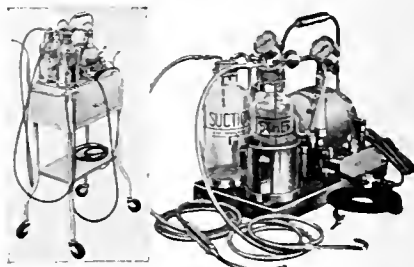


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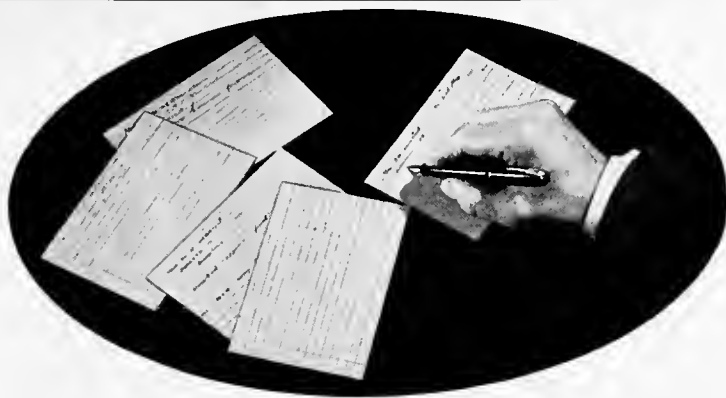
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**J.A.M.A.*, 93:1110—October 12, 1929

Brückner, H.—*Die Biochemie des Tabaks*, 1936

***The Military Surgeon*, Vol. 89, No. 1, p. 5, July, 1941

****ibid.*, p. 5

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THE PATHOLOGIC PHYSIOLOGY OF CERTAIN GASTRO-INTESTINAL SYMPTOMS

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Functional illness, particularly in the gastro-intestinal system, is of frequent occurrence. An examination of over 5600 case records in our office, which represent a fairly good cross section of the adult population of both sexes, reveals the fact that approximately 35 per cent of the patients received a diagnosis of functional illness, either primary or associated with organic disease. Many cases of functional illness in the British Armed Forces have been reported by Graham and Kerr⁽¹⁾, Payne and Newman⁽²⁾, and A. F. Hurst⁽³⁾. In view of the stress, anxiety and deprivations of war, to which civilian populations throughout the world are being subjected, and considering the increased tempo of our lives, there can be little doubt that functional diseases are becoming more frequent among the civilian populations, as well as in the armed forces.

The record of our profession in the management of functionally ill people has not been satisfactory. Such patients wander from one physician to another, and then more often than not turn to quacks for relief. Many of them exhibit one or more abdominal scars—the results of ill advised operations. Twenty years ago it was considered good medical teaching to insist that organic pathology to explain a patient's symptoms would always be discovered if sought for.

Functional illness was infrequently recognized. As a consequence those of us who graduated more than fifteen years ago were badly handicapped in our efforts to help a considerable number of people who came to us for relief. Another factor in the unfortunate situation has been ignorance of the mechanism of the production of functional symptoms. The average physician has been loath to recognize the existence of a pathological condition unless he had a sensible and satisfactory explanation of its cause. In 1927 Alvarez published an article in the *Journal of the American Medical Association* on "The Treatment of Nervous Indigestion"⁽⁴⁾, and a few years later his classic monograph on the same subject appeared⁽⁵⁾. To many a young physician, struggling in a fog of misunderstanding, these publications were illuminating and informative. They improved the treatment that he gave his patients. The medical schools are now paying especial attention to the instruction of students in psychosomatic medicine⁽⁶⁾. In spite of these advances, however, the frequency of functional disturbances of the gastro-intestinal system is by no means fully appreciated. Such conditions are frequently undiagnosed, and when recognized are often treated unwisely or even harmfully. It seems timely, therefore, to present a reasonable working basis for an understanding of the mechanism of production of gastro-intestinal symptoms of functional origin.

Read before the Second General Session, Medical Society of the State of North Carolina, Charlotte, May 13, 1942.

1. Graham, J. G. and Kerr, J. D. O.: Digestive Disorders in the British Armed Forces, Brit. M. J. 1:493 (March 29) 1941.
2. Payne, R. T. and Newman, C.: Interim Report of Dyspepsia in the Army, Brit. M. J. 2:819 (Dec. 14) 1940.
3. Hurst, A. F.: Digestive Disorders in Soldiers, Am. J. Digest. Dis. 8:539 (Sept.) 1941.
4. Alvarez, W. C.: The Treatment of Nervous Indigestion, J. A. M. A. 89:440 (Aug. 6) 1927.
5. Alvarez, W. C.: Nervous Indigestion, New York, Paul B. Hoeber, Inc., 1930.
6. Hanes, Frederic M.: Personal communication, April, 1942.

The Basis of Functional Illness

General practitioners of medicine should have the ability to evaluate the human problems that are in the background of almost every person with disordered health. That intangible thing called the art of medicine, reinforced by scientific facts, is necessary in the successful management of functional diseases.

Before we enter upon a discussion of the pathologic physiology of functional illness of the gastro-intestinal tract, let us define functional illness. This term applies to those patients who have signs and symptoms of ailments which are due only to malfunction of the digestive organs, and in whom no organic cause can be found to explain their symptoms. Their complaints are not entirely psychic in origin⁷, but may be broadly classified as psychoneurotic. If we accept the fact that pathology may be functional as well as structural, and that functional pathology is quite as capable of producing real and distressing symptoms as is structural pathology, then we have taken a long step forward in understanding functional illness of the gastro-intestinal system.

Common Functional Disturbances of the Gastro-Intestinal Tract

It is now generally accepted that gastro-intestinal symptoms such as nausea, vomiting, pain, flatulence, heartburn, and distention, are for the most part due to motor disturbances of the gastro-intestinal tract⁸, which are in reality disturbances of function. The motor disturbances more commonly seen are cardiospasm (achalasia), aerophagia, pylorospasm, duodenal spasm, biliary dyskinesia, diarrhea and constipation. Anorexia nervosa⁹, irritable colon¹⁰ and mucous colitis¹¹ all present distressing and at times painful symptoms. The accepted view now is that they are due to physiologic and psychic dysfunction rather than to organic disease. Hurst¹¹ has shown that cardiospasm (achalasia) and so called Hirschsprung's disease (megacolon) are in reality the products of

disturbed physiology, and that the dilated esophagus and colon resulting from these conditions are entirely secondary to spastic cardiac and anal sphincters, which at autopsy show no structural change. Sodeman¹² is in agreement with these conclusions.

The stomach empties partly because the pressure in it is greater than that in the duodenum. It is this *vis a tergo* that actually produces its evacuation. If spasm of the descending duodenum (mid-portion) occurs, there results the "water shed" mechanism of Osler Abbott¹³, which prevents proper emptying of the stomach. A vigorously contracting stomach sending peristaltic waves against the resisting duodenum is quite capable of causing pain.

Biliary dyskinesia, now recognized as a definite entity¹⁴, may be brought about by an intense spasm of Oddi's sphincter or of a susceptible area in the duodenum, which causes back pressure into the extrahepatic biliary ducts. Intense upper abdominal pain may result. This pain is readily understandable when it is realized that a pressure of about 30 cm. of water normally is sufficient to open the sphincter of Oddi and that, when dyskinesia is marked, the sphincter of Oddi may be so spastic as to require 200 cm. of water to relax it.

The Mechanism of Functional Disturbances of the Gastro-Intestinal Tract

There are numerous factors involved in the production of functional disturbances of the gastro-intestinal system. The interrelation between these factors is complicated and intricate and not yet fully understood. They may be hereditary, environmental, anatomic, psychogenic, physiologic or chemical. A few points concerned with the innervation, musculature and physiology of the gastro-intestinal tract are worthy of reiteration and emphasis at this point.

The organs of digestion receive their innervation from the vegetative nervous system. This portion of the nervous system has been termed sympathetic, autonomic, involuntary, and vegetative. Since it is not completely involuntary or autonomic and cannot be separated from somatic function, Grinker prefers the term vegetative¹⁵. The

7. Martin, Lav: Psychogenic Basis of Gastro-Intestinal Symptoms. South. M. J. 32:825 (August) 1939.

8. Hayward, C. E.: Motor Disturbances of the Gastro-Intestinal Tract. Northwest Med. 38:391 (October) 1939.

9. McCullagh, E. Perry and Tupper, Walter R.: Anorexia Nervosa. Ann. Int. Med. 11:839 (Nov.) 1940.

10. (a) Jordan, S. M. and Keiffer, E. D.: The Irritable Colon. J. A. M. A. 93:592-595 (Aug. 21) 1929.

(b) White, B. V. and Jones, Chester M.: Mucous Colitis. Ann. Int. Med. 11:554 (Nov.) 1940.

11. Hurst, A. E.: Anal Achalasia and Megacolon. Guy's Hospital Rep 89:182, 1939.

12. Sodeman, W. A.: Cardiospasm or Achalasia of Esophagus. Am. J. M. Sc. 199:132-140 (Jan.) 1940.

13. Caravati, C. M.: Personal Communication, April, 1942.

14. Ivy, A. C. and Goldman, Leon: Physiology of the Biliary Tract. J. A. M. A. 113:2413-2417 (Dec. 30) 1939.

15. Grinker, R. R.: Textbook of Neurology, ed. 1, Baltimore, Charles C. Thomas, 1931.

vegetative nervous system can be conveniently divided into three parts. The upper or cranial portion is composed largely of the vagus nerve and its branches, and is commonly called the cranial autonomic division. It is chiefly concerned with nutrition. The middle portion includes the series of ganglia in the thoracolumbar region and is called the sympathetic division. Its principal function is the preservation of the individual, especially under unusual stress. It is concerned with the distribution of the hormones elaborated by the endocrine glands. In its action it is antagonistic to the other two parts, which are collectively known as the parasympathetic division of the vegetative system. The third portion of the vegetative system is the lower portion, which is associated with the series of ganglia in the sacral region, and is known as the sacral autonomic division. It is concerned chiefly with elimination and reproduction.

As the vegetative system is the most primitive portion of the nervous system, it deals with the purely selfish and at the same time vital interests of the organism. In primitive life vegetative functions were all unconscious functions, but through the passage of the centuries life has become more complex and intricate, and the cerebrospinal system has developed in response to a need for better contact with the external world than was possible with the vegetative system alone⁽¹⁶⁾. Cannon and other physiologists⁽¹⁷⁾ tell us that there is a center in the brain which in health controls the vegetative nerves, the internal secretions, and the voluntary organs so efficiently that we are not aware of their existence. This center is in the hypothalamic nucleus at the base of the brain. Cushing is quoted by Alvarez as saying: "Here in this well concealed spot lies the very main spring of primitive existence—vegetative, emotional and reproductive." The important point for us to remember is that the vegetative nervous system, which innervates the digestive organs, is intimately connected by various pathways with the cerebral cortex. It is, therefore, perfectly logical to assume that these organs are capable of being influenced by stimuli sent out by the cerebral cortex.

The anatomy and physiology of the gastrointestinal tract, particularly of the hollow

organs, make them peculiarly susceptible to these stimuli. T. Wingate Todd has proven this by fluoroscopic examination of several hundred medical students⁽¹⁸⁾. He demonstrated deviation in the size and motility of the stomach and bowel, inhibition of the rhythmic peristaltic movements and lack of muscle tone, and also hypertonicity and increased peristaltic activity in students who experienced an acute or prolonged change in the state of their feelings.

The motor function of the alimentary tube is largely dependent on the smooth muscle of its wall. The older physiologists speak of the myenteric reflex or basic law of the intestine, which is essentially an alternate contraction above and relaxation below, permitting an orderly rhythmic peristaltic movement from above downward. More recently Alvarez has promulgated his "gradient theory" of intestinal movement. There has been great argument as to the myogenic or neurogenic origin of these contractions. The disagreement as to which one predominates does not preclude a rational working conception of intestinal motor function. The important point to remember is that the orderly rhythmic contractions of the intestinal tube can be inhibited, increased to the point of severe spasm, or reversed from their normal direction by various influences to which the human organism may be subjected. This fact is readily understandable when it is remembered that the smooth muscle has no basic length and that its tonus is always changing. When contracted it may be only a fourth as long as when relaxed. Furthermore, while there may be duplicate chemical function in the body, there is only one intestinal tube, and when the function of the tube breaks down or when the current of motor activity is slowed, quickened or reversed there is trouble, and the patient is conscious of it.

The hormonal theory of nervous transmission has recently received attention through advances in physiologic and pharmacologic knowledge⁽¹⁹⁾. It has been discovered that the stimulation of vegetative nerves results in liberation of powerful drugs at their endings which produce marked effects on the heart, intestine, blood vessels and skin. Out of the vagal and sacral autonomic endings comes acetylcholine, which

16. Henry, George A.: *Essentials of Psychopathology*. Baltimore, William Wood & Co., 1935.

17. Cannon, W. B. and Britton, S. W.: *Studies of the Conditions of Activity in the Endocrine Glands*, *Am. J. Physiol.* 283-294 (April) 1925.

18. Todd, T. W.: *Behavior Patterns of the Alimentary Tract*. Baltimore, Williams and Wilkins, 1930.

19. Goodman, L. and Gilman, A.: *The Pharmacological Basis of Therapeutics*, New York, The Macmillan Co., 1941.

slows the heart, dilates the blood vessels and causes sweating; and out of most of the sympathetic nerve terminals and the medullary portion of the adrenals comes adrenin, which makes the heart palpitate and elevates the blood pressure. The structures which are activated by the sympathetic impulses elaborate sympathin, which in some of its actions resembles adrenin. It has been shown that the injection of acetylcholine in normal students will cause changes in the bowel mucosa similar to those of so called mucous colitis⁽²⁰⁾. Anyone who has ever injected mecholyl (acetylcholine) for paroxysmal tachycardia needs no further proof of the profound influence it exerts on gastro-intestinal motility. While there are many peculiar and as yet unexplained features about the way in which smooth muscle responds to nerve stimulation, and while much remains to be learned about the phenomenon, it is reasonable to assume that the impulses are transmitted from nerves to muscles largely through chemical substances which are elaborated at the ends of the nerves.

Factors Producing Functional Disturbances of the Gastro-Intestinal Tract

Keeping in mind the connection between the cerebral cortex, the hypothalamic nucleus and the smooth muscle of the gastro-intestinal tract, through the various vegetative pathways and their chemical products, let us now discuss briefly some of the conditions that produce disturbing impulses which may travel over these pathways and cause dysfunction with its resulting symptoms. How may the gastro-intestinal tract be affected by an inadequate, an overwrought, or an unbalanced nervous system through the mechanisms which we have described? What are some of the factors that are capable of producing through these mechanisms symptoms that are as real and distressing as those arising from organic pathologic changes?

The large number of people affected by functional illness can be classified under the term psychoneurotics. This term is broadly used to indicate that these people suffer from symptoms which are due to an imbalance of the vegetative nervous system, which in turn brings about altered function of certain organs. A psychoneurotic individual, then, may be understood to be an individual who reacts

with somatic complaints when he finds himself in difficulty.

For convenience of discussion we might divide psychoneurotic people into two main groups. Under the first group may be considered the "constitutionally inadequate" individual, who is inferior from the psychological standpoint. He cannot quite make the grade in meeting successfully the ordinary demands of life. He has a constitutional make-up which will not permit severe or exacting work. Physically he has certain stigmata characterized chiefly by the enteroptotic type of habitus and vasomotor instability. With a fearsome, worrying and sensitive disposition, and lacking the force necessary to make a successful effort to overcome the factors that offend his sensitive nature, he is a victim of his psychobiological inferiority.

In the second group we have the individual who is not frankly constitutionally inadequate, but who for one reason or another develops symptoms with a psychogenic basis. The symptoms are due to conditions in the patient's environment to which he does not or cannot adjust himself. Some patients in this group can barely meet the requirements of a normal tranquil life; others develop symptoms only when faced with heavy obstacles. Inadequate education is responsible for the development of symptoms in some members of this group, who have not been properly instructed in regard to the working, living and social conditions of the world in which they must live. In this group we find also the well balanced individual who is forced to battle against great odds, which in time distort his point of view; and the tense, highstrung, dynamic individual who puts too much of himself into his work, consequently living under too great a tension and finally burning himself out. Another member of this group is the fatigued, overworked and overwrought individual. He may need only a rest to restore his sense of proportion, and bring his vegetative nervous system back into proper balance. Still another is the person who continues to carry out a life to which he has committed himself but which has become distasteful or even abhorrent to him.

There are many situations which produce psychic states that in turn bring on physical symptoms and complaints through the mechanisms that we have mentioned. Fear

20. Alvarez, Walter C.: New Light on the Mechanisms by Which Nervousness Causes Discomfort, J. A. M. A., 12:1010-1013 (Sept.) 1940.

is probably the greatest single factor in producing disturbances of the normal function of the gastro-intestinal organs. This does not necessarily mean acute fear, but other types of fear—fear for individual or family economic security, fear that a hidden secret will come to the surface, fear for the health of a loved one, fear of losing a position, fear of some simple disturbance of a certain organ which can be magnified a thousandfold.

A life of pretense and frustration, even though it is maintained for the sake of others, will cause changes in the function of the digestive organs. Such an example is seen in the case of a husband or wife who continues to carry out a marriage contract which for any number of reasons has lost its significance and is a source of tension instead of happiness. There are some people who can live together after love has gone. To others such a situation brings only emotional stress with resulting physical suffering. Domestic infelicity, although it may be borne with a mask of calm and indifference, is an acute and ever present source of emotional disturbance. Another example of frustration is the individual whose lot it is to remain at home and care for aged parents, while the other members of the family get out into the active world of achievement.

Sexual maladjustment and sexual frustration are frequent sources of functional complaints. I have seen patients of both sexes, pledged to a life of sexual abstinence, develop somatic complaints as a result of this type of frustration.

Other individuals develop gastro-intestinal symptoms when engaged in work to which they are not adapted. These people are often aesthetic, sensitive and high strung. Given work which they enjoy, they are different individuals. Occupational maladjustments are frequent and important sources of trouble.

The over-anxious person becomes tense over a situation which the more phlegmatic individual would take as a matter of course. Such a person is keenly aware of life and of people. He probably gets a greater thrill from living than the average, but such an awareness of life takes its toll in fatigue and often in the development of disease symptoms resulting from an imbalance of the nervous system.

In the rapid, high pressure age in which we live, fatigue is a particularly important

factor. Chronic fatigue from overwork and, strange to say, from overplay in a relatively few individuals, may result in an overwrought nervous system and gastro-intestinal dysfunction. Under present conditions and in all probability under future conditions, fatigue is a factor that should constantly be borne in mind.

Summary

In conclusion it is worth while to reiterate that the pathologic physiology of functional disturbances of the gastro-intestinal system is now soundly established. With a full understanding of present knowledge, both the patient and the physician have a rational, reasonable and satisfying explanation of the multiple symptoms of functional origin. Properly applied, this knowledge offers the basis for sound and usually successful therapy in a group of patients who in the past have been neglected, who in the present are not properly appreciated and managed, and who in the future will have to be dealt with in increasing numbers.

TYPHOID FEVER DUE TO AN ATYPICAL STRAIN OF EBERTHELLA

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Vigorous and enlightened public health measures have drastically reduced the ravages of typhoid fever in the past twenty years. In 1918, the incidence and mortality of typhoid fever in North Carolina compared very unfavorably with the reported statistics for the nation as a whole (table 1). In 1939, the morbidity and mortality statistics for typhoid fever in North Carolina compared favorably with the national average⁽¹⁾. Mortality figures for cities of more than 100,000 population in the United States indicate that the disease is being well controlled

1. (a) North Carolina Morbidity Statistics, Bulletin 1, 1918-1932.
- (b) North Carolina Morbidity Statistics, Bulletin 8, 1939.
- (c) Annual report of the Bureau of Vital Statistics of the North Carolina State Board of Health, 1939, p. 144.
- (d) Annual Report of the Surgeon General of the Public Health Service of the United States, 1919, p. 185.
- (e) Annual Report of the Surgeon General of the Public Health Service of the United States, 1939, p. 101.

From the Departments of Medicine and Bacteriology, Duke University School of Medicine, Durham.

Table 1

		Morbidity per 100,000 population	Mortality per 100,000 population	Fatalities per 100 cases
U. S. — 35 States	1918	50 ^(1d)	12 ^(1d)	25.09
North Carolina	1918	140.8 ^(1a)	22.2 ^(1c)	15.77
U. S. Cities — 57 Cities	1918		6.23 ^(2a)	
U. S. — 47 States	1938	11.5 ^{*(1e)}	1.8 ^{*(1e)}	15.74*
North Carolina	1939	9.7 ^(1b)	1.4 ^(1c)	15.44
U. S. Cities — 78 Cities	1939		0.65 ^(2b)	

* Includes paratyphoid.

in large cities⁽²⁾. Since public health administration is much more difficult in rural areas, where each farm has its own sewage and water systems, typhoid fever has been considered recently almost entirely a disease of rural communities. In North Carolina, however, the percentage of total cases reported by the eleven largest cities was essentially the same in 1918 and in 1939—12.8 per cent of 3,471 cases and 13.4 per cent of 343 cases, respectively. The experience of one of the large life insurance companies indicates that the highest death rates are now found in communities which are neither urban nor rural—the larger villages and small towns with less than 10,000 population⁽³⁾. The rates are many times higher in the Negro population, both in North Carolina and in the nation as a whole.

The fatality rate among cases of typhoid fever in North Carolina was the same in 1918 and in 1939, indicating that advances in therapy in the past twenty years have not kept pace with prophylaxis. The course of the disease may be radically altered in individuals who have been previously immunized⁽⁴⁾.

At Duke Hospital we have studied, during the past five years, 5 instances of typhoid fever due to an atypical strain of Eberthella. These cases are of importance; for one patient had previously been given typhoid vaccine. The organism has been described partially in a preliminary note⁽⁵⁾.

Case Reports

Case 1. A 21 year old white farm housewife entered the hospital on August 20, 1936, complaining of severe abdominal pain of thirty hours' duration. She had never received typhoid vaccine.

Five weeks before admission the patient was seized suddenly with a severe shaking chill followed by high fever, headache and malaise. Her family physician noted rose spots, stupor and bradycardia. Cough, furuncles, burning on urination, nausea and vomiting developed. By the fifth week she was afebrile; one-half hour after taking an enema for constipation she experienced a severe left upper quadrant pain, accompanied by vomiting and a rise in temperature. Perforation of a typhoid ulcer or infarction of the spleen was suspected.

On admission the temperature was 38.9 C., the pulse 120, respirations 18, blood pressure 110 systolic, 80 diastolic. The patient was irrational, and the skin was hot, flushed and dry. The lungs were clear. The abdomen was rounded and there was rebound tenderness in the left upper quadrant. The spleen was never felt. The remainder of the physical examination was negative.

Accessory Clinical Findings: The hemoglobin was 13.8 Gm. per 100 cc. The white blood cell count ranged from 5920 to 11,160, with basophilic stippling of polymorphonuclears, 20 per cent stab forms and abnormal lymphocytes. The urine showed albumin and white blood cells. Blood cultures were positive for Eberthella (Barbour strain), but organisms were never recovered from the stool, urine, sputum, duodenal drainage, or subcutaneous abscesses. The patient's serum agglutinated Eberthella typhosa (Rawling's strain) in a dilution of 1:40, but agglutinated the autogenous organism (Barbour

2. (a) Typhoid in the Large Cities of the United States in 1918, J. A. M. A., 72:997-999 (April 5) 1919.

(b) Typhoid in the Large Cities of the United States in 1939, J. A. M. A., 114:2103-2107 (May 25) 1940.

3. Dublin, Louis I., and Lotka, Alfred J.: Twenty-Five Years of Health Progress, New York, Metropolitan Life Insurance Co., 1937, p. 560.

4. Mallon, Barney: Typhoid Fever Occurring in Immunized Persons, J. A. M. A., 115:333-36 (July 6) 1940.

5. Poston, Mary A.: Atypical Typhoid Fever Caused by Atypical Strains of Eberthella, J. Bact., 35:56 (Jan.) 1938.

strain) in a dilution of 1:2560. The opsonocytaphagic index for autogenous organisms by Huddleston's method was zero. During convalescence a skin test with the Barbour strain gave a 7 x 4 cm. erythema.

Course: Immediately after admission an exploratory laparotomy was performed, but the intestines were normal. The temperature ranged from 37 to 41.8 C.; the patient had numerous chills and a corresponding tachycardia. Thrombophlebitis of the left lower leg, bronchopneumonia at both bases, furunculosis, and pyelitis due to *Escherichia coli* communior developed. The patient was discharged improved on October 18, 1936.

Case 2: A 29 year old white auto supply dealer was admitted on March 1, 1937, complaining of chills and fever during the past three weeks. He had never received typhoid vaccine.

Twenty-nine days before admission, while hunting, he drank out of a shallow well. Six days later chills with spiking afternoon fever began. He noticed no petechiae. For two weeks preceding admission the temperature showed no remissions. Sinus pain with purulent nasal discharge and generalized headaches developed. He continued working until three days before admission. Local treatment for the sinus infection and adequate antimalarial therapy had proven ineffective.

On admission the temperature was 39.9 C., the pulse 118, respirations 22, blood pressure 110 systolic, 65 diastolic. The patient was poorly developed and undernourished; he was not acutely ill and was mentally clear. The sinuses were all dull to transillumination. The lungs were clear. The heart was not enlarged. Occasional extrasystoles and the murmurs of mitral stenosis and aortic insufficiency were heard. The tip of a firm spleen could be felt at the costal margin. The remainder of the physical examination was negative.

Accessory Clinical Findings: The hemoglobin was 14.6 Gm. per 100 cc.; the white blood cell count ranged from 3200 to 7950, and there were no abnormal leukocytes. No malarial parasites were seen. The urine was normal. Stools gave persistently positive tests for occult blood. A blood culture on admission showed less than one colony of *Eberthella* per cubic centimeter, which agglutinated in Barbour strain immune serum but not in immune *E. typhosa* serum. Stool and urine cultures were never positive. Agglutinins developed for Barbour strain and

autogenous (Stanton strain) organisms, and in lower dilution to Rawling's strain of *E. typhosa*. A Foshay test, using 0.1 cc. of serum, showed no reaction to normal human serum at twenty-five minutes, a 2.5 cm. wheal without erythema to true typhoid serum, and a 3.5 cm. wheal with 4.5 cm. erythema to Barbour strain serum.

Course: The temperature remained around 39 C. for four and a half weeks in the hospital and dropped by lysis. On the third hospital day the patient passed a liter of blood from the bowel and went into shock. Following this experience he became apathetic and continued mentally dull until discharge on April 20, 1937. By June 26, 1937, he had gained 25 pounds in weight and was working. The stool was still positive for occult blood, but no anemia was present.

Case 3: A 22 year old white farmer was admitted on July 17, 1937, complaining of fever and malaise for three weeks. He had never received typhoid vaccine.

Three weeks before admission there was gradual onset of malaise, followed by dull abdominal pain with slight looseness of the bowels. Two weeks before admission the patient suddenly had a shaking chill with profuse sweating and high fever. The temperature remained high and he had repeated chills. Burning on urination developed. For twenty-four hours preceding admission blood was passed per rectum.

The temperature on admission was 39.6 C., the pulse 108, respirations 24, blood pressure 96 systolic, 68 diastolic. He was poorly developed, undernourished and acutely ill. No rash was noted. The lungs were clear; a faint apical systolic murmur was heard over the heart. The pulse was dicrotic and of poor volume. The spleen was easily felt. The abdomen was flat with generalized tenderness, especially at the costovertebral angles. The remainder of the physical examination was essentially negative.

Accessory Clinical Findings: The hemoglobin was 13.3 Gm. per 100 cc. on admission, but fell to 7.4 Gm., subsequently rising again. The white blood cells ranged from 1650 to 5300, with as high as 62 per cent stab forms of polymorphonuclears. During recovery many large lymphocytes appeared. Two Wassermann and Kahn tests were positive during the fever, but subsequent ones were negative. The urine showed occasional traces of albumin and leukocytes. The stools were strongly positive for occult blood for

at least six weeks. Blood cultures were positive for the Barbour strain of Eberthella. No organism was grown from the urine or stool. Agglutinins appeared for the Barbour strain, and were present for *E. typhosa* in much smaller dilution.

Course: Furuncles appeared and one large abscess developed. The patient was acutely ill and the temperature remained high with a spiking curve for fifty-two days, and then quickly dropped to normal. Sulfanilamide, 3.6 Gm. daily for seven days after admission, given by mouth, was ineffective.

Case 4: A 27 year old single colored saw-mill worker entered the hospital on July 1, 1937, complaining of a cough of two weeks duration.

Eighteen days before admission the patient developed a respiratory infection productive of yellowish sputum. Twelve days after onset, dyspnea, weakness and cough forced him to bed. He had some headache, sore throat, choking and aphonia. He had been vaccinated against typhoid fever. The type of vaccine and the time of vaccination could not be determined.

On admission the temperature was 40.3 C., the pulse 130, respirations 40, blood pressure 110 systolic, 66 diastolic. The patient was obese and acutely ill, with rapid shallow respirations. He spoke only in a whisper; laryngoscopic examination revealed a punched-out ulcer along the anterior portion of the right vocal cord. The percussion note and breath sounds were little affected over the chest; sticky fine rales were heard over the entire right lung, and a few below the scapula on the left. The spleen was not felt. The remainder of the physical examination was negative.

Accessory Clinical Findings: The hemoglobin was 13.6 Gm. per 100 cc., the leukocytes 13,760, with 41 per cent segmented polymorphonuclears, 2 per cent stab forms, 26 per cent small and 22 per cent large lymphocytes, 7 per cent young and abnormal lymphoid cells, 2 per cent monocytes. The white blood cell count rose to 25,900, with an increase in polymorphonuclears; it then gradually dropped and the abnormal forms disappeared. The urine contained albumin and white blood cells. Stools were negative for blood. The sputum contained no acid-fast organisms, spirochetes or fungi, but *Staphylococcus aureus* and alpha hemolytic streptococcus were cultured. X-rays of the

chest revealed diffuse peribronchial thickening radiating out from the hila. A blood culture was sterile, and no organism of the typhoid-dysentery group was found in the stool, urine or sputum. Introduction of 0.1 mg. of tuberculin intradermally gave a 1 plus reaction at forty-eight hours. The Widal reaction, with stock strains of *E. typhosa*, was negative, but the patient's serum agglutinated an atypical strain in a 1:1280 dilution.

Course: The temperature remained around 40 C. with a relative bradycardia for one week, gradually dropping by lysis to normal by the end of the third week. On the eighteenth hospital day a thrombophlebitis of the right leg developed. The patient was discharged improved on the thirty-third hospital day. During the second week in the hospital he received 7.2 Gm. of sulfanilamide daily for five days and then 3.6 Gm. daily for six days.

Case 5: An 18 year old white female college student was admitted September 16, 1940, complaining of malaise for five days. In July, on returning from a seaside resort, she had noted generalized joint pains with swelling of the fingers and cervical lymph nodes, accompanied by a rash on the abdomen and back. In August an elective appendectomy was done for recurrent lower abdominal cramping pain. She recuperated at a farm where the well had been tested one month previously. Three weeks before entry headaches began, followed by general malaise, aching and cough. She vomited the night before entry. She had not received typhoid vaccine.

On admission the temperature was 38.3 C., the pulse 100, respirations 18, blood pressure 110 systolic, 68 diastolic. The patient was undernourished. No rash or palpable lymph nodes were present. The lungs were clear. Vague generalized abdominal tenderness was present and the spleen was palpable. The remainder of the physical examination was essentially negative.

Accessory Clinical Findings: The hemoglobin was 9.9 Gm. per 100 cc., the leukocyte count 3600, with 67 per cent polymorphonuclears, including 15 per cent stab forms. The urine contained a trace of albumin and a few white blood cells. Blood cultures were positive for the Barbour strain of Eberthella. The organism was not grown from the stools. No agglutinins developed for Rawling's

strain of *E. typhosa*, but they appeared for the Barbour strain.

Course: The temperature gradually fell to normal. Intramuscular liver in 15 unit doses daily was not effective in raising the white blood cell count.

Discussion

Although the disease in these cases was caused by an atypical species of the genus *Eberthella*, many clinical features of classical typhoid fever were present. *Stupor or mental dullness was noted*, although in case 2 this was not present until after a massive intestinal hemorrhage. All cases presented *bradycardia* at some time during the course, but a typical dicrotic pulse was felt only occasionally. *Convalescence* was long, but all patients recovered. *Complications* were numerous and included intestinal hemorrhages, infarction of the spleen, thrombophlebitis, pyelitis, furunculosis with abscess formation, pneumonia and recrudescence of the fever. In case 4 the disease was primarily pneumonic; although organisms were never grown from this patient's blood, stool, urine, or bile, the stupor, bradycardia, and thrombophlebitis, together with a high titer of agglutinins for the atypical strain alone, support the diagnosis of typhoid fever.

The first strain of the organism isolated (Barbour), when freshly grown from the blood stream, fermented sucrose, produced indol, and was agglutinated by immune typhoid serum only in a dilution of 1:20. After subsequent transplants on artificial media, the organism lost the power to ferment sucrose and produce indol. The second strain (Stanton) gave typical carbohydrate fermentations, but was not motile; it was not agglutinated by immune typhoid serum, but was agglutinated by serum from the first case (Barbour). After a number of transplants on artificial media the organism became motile. The third and fourth strains (Woodward and Laws) gave typical cultural reactions for *E. typhosa*, but were not agglutinated by immune typhoid serum; each was agglutinated by the serum of both the first and second strains (Barbour and Stanton). After a number of transplants on artificial media, when the cultural changes noted had occurred, both the first and second strains were agglutinated by immune typhoid serum in high titer.

The organism was cultivated from the blood only and was never recovered from the stools—even after hemorrhage from the bowel—or from urine, bile obtained by duodenal drainage, or sputum.

TABLE 2

Case	Date	Cultures				Agglutinations				
		Blood Colonies/cc.	Stool	Urine	Bile	Typhoid (Rawlings Strain)	Para. A	Para. B	Barbour Strain	Stanton Strain
1	Aug. 21-Sept. 7, 1936	0 (5)*	0 (5)	0 (2)		1:40 (4)	0	0		
	Sept. 8-Oct. 1, 1936	-1 (4)	0 (2)	0 (6)		0 (2)	0	0	1:2560	
		-8 (3)								
	Oct. 2-16, 1936	0	0 (8)	0 (2)	0					
	Nov. 23, 1936					0	0	0	1:1280+	
	June 6, 1937	0	0			0	0	0	1:160	
	Aug. 19, 1939					1:1280			1:1280	
2	March 2-8, 1937	-1 (3)	0 (2)	0		0	0	0	0	0
	March 18, 1937	-1 (2)	0 (3)	0		0			1:180	1:180
	March 22-27, 1937	-1	0			1:80 (2)			1:320	1:160
	April 5, 1937	0 (2)	0 (4)			1:640			1:2560	1:2560
	July 9, 1937					1:80			1:160	1:2560
3	July 18-24, 1937	10-14 (2)	0 (2)	0 (2)		1:160	0	0		
	Aug. 10-Sept. 7, 1937	0 (2)	0			1:80			1:320 (mixed)	
	Sept. 27, 1937		0 (4)			1:160			1:640 (mixed)	
4	July 1-23, 1937	0 (2)	0	0		0	0	0		
	July 26-30, 1937		0		0				1:1280 (3)	
5	Sept. 16-23, 1940	1-9 (3)	0 (2)			0	0	1:1280		
	Sept. 23-27, 1940	0 (2)				0	0	1:320		
	Oct. 7-17, 1940	0 (2)	0			0	0	0	1:1280 (2)	
	Jan. 30, 1941		0			0	0	0		

*The figures in parentheses indicate the number of determinations, if more than one.

-Indicates less than.

†Indicates innumerable.

It was often difficult to demonstrate the organisms in the blood stream. Numerous cultures by various techniques were sterile in case 1, until cultures were made during the early part of a chill. As agglutinins developed for the atypical strains, the titer usually rose to a high level. The peak was 1:640 in only one case; in the others it reached 1:1280 or more. At the same time, agglutinins for the Rawlings strain usually were only 1:40 to 1:80. The immune specificity is further indicated by the fact that only one patient transiently developed cross-agglutinins for *Salmonella paratyphi* or *Salmonella schottmuelleri* (paratyphoid A and B). That these agglutinins were not due to the presence of Vi antigen is proved by the fact that only heat-killed antigen of all strains with formalin added was used. False positive serologic tests for syphilis were obtained in one case during the height of the fever.

Treatment followed the lines of usual supportive measures. Two cases were treated with sulfanilamide without striking results; we have not had occasion to try other sulfonamide derivatives. Transfusion was used repeatedly in three cases and no ill effects were noted. No attempt was made to obtain immune donors, and no convalescent or therapeutic sera were tried. Intramuscular liver did not raise the peripheral white blood cell count in one instance, although it was given daily for eighteen days.

Four of the 5 patients lived in North Carolina. The fifth came from the District of Columbia, but had spent many week-ends in nearby Virginia and had just entered school in North Carolina; it is not known where her infection occurred. It was not possible to culture organisms from well water on the farm of the first patient, nor were agglutinins or organisms found in the blood of 2 patients convalescing from typhoid fever on nearby farms.

One patient had received typhoid vaccine, but it could not be established whether this was commercial or North Carolina State Board of Health vaccine. If mouse protection experiments bear out the clinical immunologic observations, it might be worth while to include this strain in the State vaccine, which before 1933 was made with Rawling's strain, but is now made with the Grinnell strain.

Summary

Five cases of typhoid fever due to an atypical strain of genus *Eberthella* are described, and the clinical, bacteriologic and immunologic findings given; none of the patients died, although complications were frequent. Sulfanilamide was ineffective in 2 cases. One patient had received typhoid vaccine but was not protected against this strain.

THE LOCAL USE OF THE SULFONAMIDE DRUGS

DONALD B. KOONCE, M. D., F. A. C. S.

WILMINGTON

After the general use of the early sulfonamide drugs had made the term chemotherapy a byword in the practice of medicine and surgery, a great many men argued their value and experimented with their use locally. In 1939 the first work on the subject was published in this country by Jensen. He reported a group of compound fractures in which sulfanilamide was applied locally, with a drop in the percentage of infection from 30 per cent to 4.4 per cent. Since that time innumerable articles have been written on this subject and the local application of chemotherapy in wounds has become an accepted and widespread practice. Reports from the British in France and more recently from our own forces in the Philippines have proved its value in the treatment of infected wounds and as prophylaxis in the potentially infected cases. These drugs are now being used extensively as local agents in the care of wounds, not only in the base hospitals but also in the first aid stations on the field. It has even been suggested that every soldier carry a package of sulfanilamide powder in his emergency kit and be taught to use it immediately on a wound.

Although there is still some discussion of the real action of these drugs generally and locally, it is pretty definitely accepted that they are both bacteriostatic and bactericidal in some way. Their local application causes no harmful reaction in the tissues other than a foreign body reaction when they are used in the powder form. They have been used as local agents even in the brain and the eye.

Read before the Section on Surgery, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

There is no suppression of the normal response of tissue to injury; rather there seems to be a definite stimulation to the processes of repair. Wounds heal faster with less scarring. The only contraindication to their local use is in those few patients who have previously had severe toxic reactions to the use of one of the group.

We have found sulfathiazole to be the most efficient member of the group for local use. It seems to be equal to sulfanilamide in the treatment of streptococcic infections and far superior in staphylococcic infections. It is more slowly absorbed and its effects are therefore more persistent locally. When it is used as a powder it is finer, smoother, and more easily disseminated, thereby causing less foreign body reaction and less collection of serum. The cost of sulfathiazole, however, is considerably greater than sulfanilamide, and where the above mentioned advantages are not extremely important the latter may be used. We have as yet had no experience with the use of sulfadiazine as a local agent.

There are a multitude of pastes, solutions, powders, and other preparations of the sulfonamide drugs for local use. One of the most famous is "Zisp", used by the British medical corps. It consists of equal parts of zinc peroxide, iodoform, and sulfanilamide in paraffin. Our experience has been entirely with the powders of sulfanilamide and sulfathiazole and with a paste of 5 per cent sulfathiazole in petrolatum. Although most authors recommend sterilizing the powders, we have made no effort to do so, and so far have not regretted it. We have practiced radical debridement and tight closure without drainage whenever possible. Some of the poor results are, we believe, due to poor debridement. In cases where injured tissue is left, it must slough away or be taken away by phagocytosis. Either of these processes causes considerable serum formation, which retards the action of the drug by diluting it, increasing absorption, or causing it to be drained away. We have gotten best results in wounds which were closed tight with nonabsorbable sutures, because there is less serum formation.

Case Reports

The following are a few cases representative of our use of these drugs as local agents in rather severe injuries:

Case 1. A white woman 30 years of age

was admitted to the accident ward at 1:30 a.m. on January 29, 1941, in a critical condition, having been in an automobile accident. She was found to have a compound comminuted fracture of the lower third of the left femur with an extensive laceration of the external surface of the left thigh and knee; fractures of the first, second, third, and fourth right ribs and of the second and third left ribs in the midaxillary line with marked displacement of the fragments; a comminuted fracture of the right pubis and its rami; a comminuted fracture of the left acetabulum and the wing of the left ilium, extending into the left sacro-iliac joint. She was given supportive treatment, tetanus antitoxin and gas gangrene antitoxin. After immediate radical debridement the left thigh wound was partially sutured and packed with vaseline gauze. Reduction of the left femur was attempted, and a cast was applied. Two days after admission she developed a right sided pneumonia, and sulfathiazole was started by mouth. On the third day after admission early gas gangrene was found in the left thigh; multiple incisions were made, serum was given, and sulfanilamide powder was applied locally to the wounds. The response to chemotherapy was spectacular so far as the pneumonia was concerned, but the gas gangrene responded slowly. After about two weeks there was no remaining evidence of infection by Welch's bacillus, but there was an extremely virulent secondary mixed infection which responded to various treatments very poorly. The patient improved slowly until April 7, when there was a profuse arterial hemorrhage from the wound in the left thigh which was almost fatal before the cast could be removed and the hemorrhage controlled by packing the wound. Two other hemorrhages of frightening severity occurred on April 10 and April 15. Following these hemorrhages the infection of the wound flared up and there was profuse drainage. On April 27 there was a well developed dry gangrene of the distal third of the left foot. On May 1, under local anesthesia, an amputation was done through the middle third of the left thigh and partly through the chronically infected area. All of the infected tissue possible was excised, the tissues were thoroughly impregnated with sulfanilamide powder, and the wound was loosely closed with through and through sutures of nylon, with

no drain. There was a slight serous drainage from the wound for about two weeks. From that time on the healing was rapid and the patient's improvement remarkable.

Case 2. A colored man, 45 years of age, was admitted on August 25, 1941. While working in a lumber camp he had been injured by a log which rolled on his left leg. He was found to have a compound comminuted fracture of the left tibia and fibula in the middle third, with the proximal ends of the bones protruding through wounds on either side of the leg. Immediate reduction was done under local anesthesia by the introduction of Stienmann pins through the tibia above and below the fragments, and the use of a traction apparatus. Complete debridement was done, sulfanilamide powder was implanted between the ends of the bones and in the wounds, and the wounds were closed tight with nylon sutures. A cast was applied embodying the pins. The pins were removed in three weeks and the cast was changed in six weeks. At no time was there any evidence of infection or drainage. In four months' time there was solid union, with no deformity. In six months the patient was back at work in the lumber camp.

Case 3. A colored man, 32 years of age, was admitted on August 25, 1941, after having been injured by a piece of steel falling on his right leg. He was found to have a compound comminuted fracture of the right tibia and fibula at the junction of the middle and lower thirds. The proximal ends of both bones were protruding from the wounds on either side of the lower leg. Under local anesthesia Stienmann pins were inserted through the tibia above and below the fracture and reduction was accomplished with a traction apparatus. Complete debridement was done and sulfanilamide powder was introduced between the bones and all through the wounds, which were closed with nylon sutures and no drain. A cast was then applied embodying the pins. There followed considerable bloody drainage but no evidence of infection. The pins were removed in three weeks and the cast was changed in six weeks. At the time the cast was changed there was some sloughing of the skin over the internal wound, but there was solid granulation tissue underneath. Union was slow, necessitating the patient's wearing a cast or plaster splint for five months. At the present time, however, he is working daily as a laborer

with no trouble, although he has some internal bowing of the lower right leg.

Case 4. A white boy, 16 years of age, was admitted on February 2, 1942, after having been struck by an automobile. He was found to have a cerebral injury, although there was no fracture of the skull, and a compound comminuted fracture of both bones of the right lower leg in the middle third, with partial avulsion of the soft tissues of almost the entire outer side of the calf. A fairly large piece of bone was removed from the wound by an intern in the accident ward. Under general anesthesia an attempt at reduction was made with the use of Stienmann pins and a traction apparatus. Extensive debridement was done, and sulfathiazole was introduced into the layers of the wound. Closure with nylon sutures and no drains was attempted but was incomplete. A cast embodying the pins was applied. Convalescence was stormy because of the cerebral trauma. X-ray revealed distraction due to the missing piece of bone, so the pins were removed and the cast taken off on March 10. The partly avulsed skin was found to have sloughed off, but there was no evidence of infection. On March 18, under general anesthesia, an open reduction was done; the ends of the tibia were plated together and more sulfathiazole powder was introduced. It was impossible to close the skin entirely over the bone and plate, so part of the tibial area was left bare and filled with sulfathiazole powder. The patient is still in the hospital, but there is union and the entire exposed area of bone and plate has granulated over and is healing with no evidence of infection.

Case 5. A white boy 16 years of age was admitted on July 21, 1941, after having been caught in a buzz saw. He was found to have severe jagged lacerations of both knees just below the patella, extending through the quadriceps tendon and the joint capsules and exposing both knee joints, but fortunately not injuring any bony structures. The boy was badly shocked, having been brought some seventy miles, so he was given only supportive treatment at the time. Repair of his wounds was performed twenty-four hours later. Under general anesthesia a radical debridement of the wounds of both knees was done and sulfanilamide powder was introduced into the joints and into the layers of the wounds. The capsules and tendons were sutured, the skin was closed tight with stainless steel sutures, and posterior plaster

splints were applied. Passive motion was started in five days and the splints were removed in two weeks. There was some serous drainage from the wound in the right knee for several days, but no evidence of infection. On September 4, 1941, the patient was found to have full function of the left knee and 80 per cent function of the right knee.

Case 6. A white woman 30 years of age was admitted on July 29, 1941, after having been in an automobile accident. She was found to have extensive lacerations of the face and scalp and a fracture of the transverse processes of the second, third, and fourth lumbar vertebrae. The patient had had such an extensive blood loss and was so shocked that her wounds were packed with sulfanilamide powder and pressure bandages were applied until her condition could be improved with plasma and other supportive measures. Thirty-six hours later under avertin and local anesthesia, complete debridement was done. Sulfanilamide powder was implanted and the wounds were closed with fine nylon. She was discharged from the hospital on August 31 with her wounds healed and a good cosmetic result.

Case 7. A white boy 17 years of age was admitted on December 17, 1941, after a can of gasoline had exploded, setting fire to his clothes. He was found to have second and third degree burns of the entire face, both forearms, the right hand, and the entire lower left leg and knee. He was given the usual supportive treatment and the burns were thoroughly cleansed and debrided under anesthesia, and 5 per cent sulfathiazole in petrolatum was applied. The burned areas were kept covered with this preparation, except when crusts formed around the edges, and then peroxide soaks were used. The only toxic effect from the sulfathiazole was an increase in the white cell count to 24,000. This rapidly decreased when the paste was stopped. The patient was discharged from the hospital with his burns healed on February 23, 1942, and returned to work on March 25. He has considerable scarring, but no real contraction.

Statistics

The value of the sulfonamides in the local treatment of minor wounds is well demonstrated by the following figures. During the five months from November 1, 1941, to April 1, 1942, 1797 cases of abrasions and lacerations of varying severity were treated in the

clinic of the North Carolina Shipbuilding Company. In approximately 1,500 of the cases sulfathiazole was used, either as powder or in the 5 per cent paste. In none of these cases has there been an infection of any real severity.

Conclusions

1. The results in early infections or in cases only potentially infected have seemed almost miraculous, whereas the results in old chronic infections have been much less satisfactory.
2. Although the sulfonamides seem to be of definite value locally in preventing gas gangrene and are helpful after it has developed, especially when they are supplemented by zinc peroxide, the serum should certainly not be discarded.
3. One of the most impressive factors in the local use of these drugs is the apparent stimulation of the processes of repair, causing more rapid healing with less cicatricial tissue.
4. The addition of blood plasma and the sulfonamide group of drugs to our medical and surgical armamentarium will certainly save many lives in this present war which would have been lost in the first World War.

Abstract of Discussion

Dr. Newsom P. Battle (Rocky Mount): One of the most important things Dr. Koonce brought out was the importance of thorough cleansing and debridement of the wound before the use of a sulfonamide preparation. His results, I think, substantiated his remarks; they seem to me to have been unusually good.

Our experience with the sulfonamide drugs has been confined almost entirely to sulfanilamide, although we have used some sulfathiazole. For a long time we did not make any attempt to sterilize the drug; then we began to sterilize it. We found that our results with the unsterilized drug were just as good as they were with the sterilized drug, and that quite frequently the sterilized drug had lumps in it.

We have closed the wounds just as Dr. Koonce has, and I think our results have been almost as good as his.

Dr. Ben F. Royal (Morehead City): It has been my unhappy duty for the last eighty days to see a good many submarine victims, and to treat them for burns, compound fractures, and shrapnel wounds. We have treated those cases largely with sulfathiazole on an Unguentine base. We went through the list, from the old Carron oil up to the sulfathiazole powder, and for reasons satisfactory to ourselves we decided upon the Unguentine and sulfathiazole. We have had rather wholesale experience with it; there have been brought in to us sometimes eight or ten or twelve or sixteen burned men at a time,

and when I say "burned" I mean burned. The fortunate ones get into a life jacket. That is made of kapok, which is fire-resisting. They dive overboard into a burning sea. They cannot dive under the burning oil on top of the water because the jacket keeps them up, and they float around in it either until the fire burns out or until they are picked up. They are burned on the head, neck, face, arms and hands, and legs. The hands are always the worst burned.

After some experimentation, the last group of cases we had were treated with an Unguentine dressing, upon which was sprinkled sulfathiazole powder which had been autoclaved, until the dressing was entirely white. No effort was made to measure the dosage. We have not seen any indications of overdosage in any case. The captain of a tanker developed a little evidence of infection in one parietal region, but that promptly cleared up.

I see no reason to change from sulfathiazole to any other preparation, because, in the experience we have had, it has been very satisfactory. Healing has been prompt and scar formation very pliable, and we had no secondary inflammation.

SOME MILITARY ASPECTS OF EYE, EAR, NOSE AND THROAT CLIENTELE

CAPTAIN JAMES B. MILLER, M. C.

FORT BRAGG

During 1941 there were 31,159 patients treated and examined at the Eye, Ear, Nose and Throat Clinic, Station Hospital, Section One, Fort Bragg. This number may be divided into the following groups:

1. Military personnel—20,206
2. Dependents of military personnel—7,057
3. All other types examined—3,896

The last two groups I mention only in passing, since we are concerned in this paper solely with actual army clientele.

Although the Eye, Ear, Nose and Throat section of any army post is one of the least mentioned of all the services, we find that its functions, in relation to army personnel, are among the most important. They include not only treatment of patients, but induction board examinations for confirmatory diagnosis, examinations for certificates of disability, and final examinations of all types. The methods of physical examinations since total mobilization began in 1940 have become much more accurate. Our percentage of rejections at Fort Bragg was at first unusually high—approximately 30 per cent. One of the most frequent causes for rejection was chronic, purulent otitis media—unilat-

eral or bilateral. In Mobilization Regulations 1-9, Sections 4 and 5, the following examination procedure is given:

"The external ears and mastoid region will be examined by inspection and, if necessary, the mastoid region by palpation. The external auditory canal and tympanic membrane will be examined by reflected light or by the self-illuminating otoscope. Acuity of hearing will be determined by the low conversational voice test and by the Audiometer when indicated."

Hearing of 10, 20 or better allows a man to be classified as 1-A. Men with hearing less than 10/20 but more than 5/20 are put in Class 1-B. Men with hearing less than 5/20 or with chronic purulent otitis media, with or without chronic mastoiditis or any perforation of the membrana tympani, are rejected.

The following standards for visual examinations are given in Army Regulations: Class 1-A: Normal vision or 20/100 bilateral without glasses, if correctible to 20/40 or better, bilateral; slight nystagmus; slight conjunctivitis; small pterygium, strabismus, not interfering with the above vision; color blindness, and exophthalmos, provided hyperthyroidism is not present.

Class 1-B, or limited service: A minimum vision of 20/400 bilateral without glasses, if correctible with glasses to 20/40 in either eye. Loss of one eye, or blindness in one eye not due to progressive organic change, with vision in the other eye of not less than 20/200, correctible to not less than 20/40; inversion of eyelids; eversion of eyelids; ptosis; trichiasis, epiphora; extensive pterygium; chronic dacryocystitis; blepharospasm; diplopia due to muscular paralysis of an eye, if mild.

Class 4: Vision of less than Class 1-B; disfiguring cicatrices; chronic keratitis; any active disease of the retina, choroid or optic nerve; retinal detachment; marked nystagmus; glaucoma; trachoma; severe muscular paralysis with diplopia.

Naturally these standards have been modified to a great extent since total mobilization and an all-out war effort began. The mental attitude of the man, as well as his ability to make an all-round good soldier, must be carefully considered.

Among the ear disturbances seen among soldiers at Fort Bragg are various types of otitis media, especially those due to ear

trauma caused by big guns, since we are principally an Artillery Center. Men who have just come from the firing range frequently enter our clinic complaining of severe tinnitus and hearing decrease. We have as yet seen no gross drum trauma or drum rupture, although Perlman reports in his "Acoustic Trauma in Man" that drum rupture is not a rare occurrence in men caught unawares near big guns which are firing. He states that a sudden loud report induces a corresponding series of contractions of the middle ear muscle. Before each contraction there is a latent period, during which the vibrations of the ossicular chain are not dampened by the contracting muscles. During this period the cochlea is unprotected and damage can be done if the explosion is severe enough and near enough. The danger zone is within a radius of twenty feet from an explosion. Most of our cases are in men who have used no ear plugs, or who were caught unawares before "getting set". During the Carolina maneuvers approximately 50 men came to our clinic complaining of tinnitus of varying degree, all showing perfectly normal drums, but each complaining of the same type of tinnitus—a rather high-pitched hum. This symptom routinely averaged about five days in duration, no matter what we did by way of treatment. Catheterization seems to be of very little help in this condition.

We see many cases of eye trauma resulting from fist fights, and during maneuvers many actual cases of shell fragment injuries from dud shells. The precautions are so much greater now that we seldom see the dud type injury in camp. Our method of handling these has been modified a great deal by Tyrrell's report of the injuries from air raids over London. He gives his patients plenty of time to recover from shock before any eye injury treatment is undertaken, especially that involving surgery. Men with eye injuries who were brought into Hospital One from the maneuver area had to wait some time for treatment because of the distance. The patients who had had plenty of time to recover from shock did much better postoperatively than those operated on immediately.

The number of men who seek examination to obtain certificates of disability for discharge has decreased considerably in the past six months. Not only are the men being

examined more carefully, but their mental attitude has become much better. The number of rejections for chronic otitis media is now less than half the original number. The outright declaration of war has cut down our chronic clinic visitors to a great extent. Very few men come to the hospital unless they are actually ailing. The old "gold brick" is getting rarer. The malingerer is less difficult to deal with, because there are fewer of them. Since the medical officer has a duty not only to his soldier patient, but also to the government, he must consider both in examinations as well as in treatment. Naturally there is not a great demand for radical surgery, because these men have been fairly well checked before entering the service. They are a select group of men.

It has been estimated that it costs the government from \$500 to \$2,000 to get a man back home after he has been taken in through mistake and then discharged. Our great plea is, therefore, for careful pre-service examinations. The use of the sulfonamide drugs, better diagnostic methods, and more careful pre-service examinations, as well as better antisepsis and preparation for surgery in the field, have made the American fighting man the leader of all in health.

Abstract of Discussion

Major Bradley (Fort Bragg): Captain Miller has given a resume of what an eye, ear, nose and throat man would see in a station hospital in peacetime and in the beginning of a war. We are in great need of ophthalmologists and otolaryngologists, because they have not come in as other doctors have. The organization of the Medical Corps of the army is such that we cannot guarantee that you will be working altogether in your specialty at the present time; however, there is a great tendency in the army of today—unlike the army of 1917—for specialists, and the chances are that you will be given some type of work within your sphere.

The Standard of Living—There is some ground to believe that it is futile to set an arbitrary standard of living. In fact, the use of the word "standard" is unjustified. There can be an average level of living, but there can be no standard arbitrarily set because of individual differences. What seems a pittance to one man is like a fortune to another. There has recently appeared a discussion of this problem in which it was stated that 66 per cent of the population were living on a substandard basis. This is like saying that the average is below the average.—A. Warren Stearns: *The Role of the Physician in a Competitive Society*, New England J. Med. 224:885 (May 22) 1941.

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NEW LIGHT ON TYPHOID FEVER

In the *Hawaii Medical Journal* for May is a fascinating account of an epidemic of typhoid fever which occurred in Honolulu recently⁽¹⁾. Between February 25 and March 21, 1942, sixty patients with typhoid fever were admitted to one hospital (name deleted by censor). The epidemic was soon traced to a food handler in the cafeteria of a junior high school. All but two of the patients attended this school. Of these two, one was the sister of a student; the other was a 27 year old man who had no connection with the school. The food handler's father was also found to be a carrier, and both were isolated.

It is doubtful if within modern times a better opportunity has been presented for a controlled study of typhoid fever. The patients, with the two exceptions noted, were all approximately the same age; they had all received approximately the same dose and strain of the typhoid bacillus; and they were all in the same institution. The hospital staff was alert to seize the opportunity to evaluate different methods of treatment.

In this epidemic there were many varia-

tions from the usual clinical course of typhoid fever—even more than are customary in children. The onset was moderately abrupt; the temperature curve was marked by daily variations of 5 to 7 degrees; the spleen was felt in only 7 per cent of the cases; a slow pulse was found in only 13 per cent, and a dicrotic pulse was not common. Rose spots were found in half the cases. Complications occurred in 22 per cent, or 14 of the cases: intestinal hemorrhages in 10 cases; perforation, pleurisy, periostitis and psychosis each in 1 case. Relapses occurred in 6.5 per cent of the cases. There were two deaths in the series: one from perforation, one from toxemia.

Instead of leukopenia, a normal leukocyte count—7000 to 8000—was the rule. Only 21 per cent of the patients had initial counts of less than 6000, and 11 per cent had initial counts of more than 10,000.

Blood cultures were positive in 32 per cent of the cases; half of the positive cultures were obtained as late as the third week of illness. Stool cultures were positive in 64 per cent of the cases, urine cultures in 59 per cent; both were most often positive in the third week. Agglutination tests were positive in all cases in a dilution of 1:160 or higher; in more than four-fifths of the cases at 1:320 or more; and in one half at 1:640 or higher.

Fifty-seven patients had not been previously vaccinated against typhoid fever; three had had one or two injections within fourteen days prior to the onset of illness.

Eight patients were given sulfaguanidine, nineteen sulfathiazole, and six human serum from previously vaccinated individuals. The remaining twenty-seven patients were treated symptomatically as controls. There was one death in the group of patients treated with sulfathiazole and one in the control group. The conclusion reached by the authors was that the control group did just as well as did those receiving the sulfonamides or the serum. This conclusion coincides with the opinion held by most observers, but it is based upon far greater weight of evidence than any yet seen in the literature since the advent of the sulfonamides. Drs. Hoagland and Fleming are to be commended for an admirable piece of clinical research.

1. Hoagland, Major Robert J. and Fleming, Lieutenant James P.: Clinical Aspects of an Epidemic of Typhoid Fever, *Hawaii M. J.* 1:307-311 (May) 1942.

HOTELS INTO HOSPITALS

Harper's Magazine for August contains a short article by Charlotte Muret which should be especially interesting to North Carolinians. It outlines briefly a practical method for taking care of large numbers of people who might be injured in an air raid or other emergency. The plan is to utilize hotels as temporary casualty hospitals. Full credit for originating the idea is given Dr. Clement Monroe, of Pinehurst. The inspiration came to Dr. Monroe when the facilities of his own hospital were overtaxed by a bus accident which sent him thirty seriously injured people to be cared for. Knowing that Fort Bragg—only forty miles away—would be a logical target in case of an air attack, and foreseeing the confusion that would follow an air raid, Dr. Monroe persuaded the hotels in the county to cooperate in preparing for such an emergency. Two rooms in each hotel are set aside. One is equipped as an operating room; the other used to store necessary materials. Owners of trucks and station wagons have volunteered to use them as ambulances if necessary.

"All that the room destined to serve as an operating theater requires is a suitable table, a system of powerful lights, and special connections for an electric sterilizer . . . It may be possible to use the hotel's pressure cooker for auxiliary sterilization."

This plan is so practical and so sensible that it deserves wide consideration. All honor is due Dr. Monroe for scoring another North Carolina "first".

* * * *

THE A.M.A. SILVER MEDAL

In this journal's account last month of the Atlantic City meeting of the American Medical Association, a news item of great interest to North Carolina doctors was omitted. For the demonstration of their technique for operating room sterilization by radiant energy, Drs. Deryl Hart and Samuel E. Upchurch, of Duke Hospital, were awarded the Silver Medal by the Committee on Scientific Exhibit. This is the second highest recognition that can be won by an exhibit. When it is recalled that the Scientific Exhibit this year was perhaps the best yet, it is evident that Drs. Hart and Upchurch have brought real honor to their school and to North Carolina. The NORTH CAROLINA MEDICAL JOURNAL offers its belated but hearty congratulations to them.

DR. LONG RESIGNS FROM STATE HOSPITAL STAFF

An Associated Press dispatch recently announced that Dr. R. H. Long has resigned from the staff of the State Hospital at Morganton. For more than twenty years Dr. Long has been a member of the medical staff of the institution, and for a number of years has served as assistant superintendent. In November, 1939, Dr. Long suffered a coronary occlusion, but in spite of this handicap went on with his work until it became evident that the load was too heavy for him to carry.

It is probable that Dr. Long would have sought relief from responsibility sooner but for the investigation that has been under way since March. A true soldier, he did not want to quit while under fire. Those who know him, however—whether doctor, patient, or friend—know that he has no reason to shrink from the most searching inquiry into his character, conduct, or ability. His high ideals were manifest in an address made to the Catawba Valley Medical Society two years before the investigation was launched, and published in the NORTH CAROLINA MEDICAL JOURNAL for December, 1940: "Policies and Needs of the State Hospital at Morganton". The theme of this paper is given in the concluding paragraph: "It is the ambition and intention of this administration to make this a hospital in fact as well as in name . . . In order to accomplish these things more generous appropriations must be made. . . . We earnestly seek your support in removing from the public mind the age-old concept of the 'Insane Asylum', and in teaching them to think of it as a hospital where cures and adjustments may be made."

This statement came from Dr. Long's heart. The very best years of his life were occupied in the effort to realize this ambition. That his work culminated in certification by the American Board of Psychiatry and Neurology in December, 1940, was to him only incidental.

As Dr. Long lays down the burden of active administrative work and enters upon a period of well-earned rest, the NORTH CAROLINA MEDICAL JOURNAL can think of no more fitting words than "Well done, thou good and faithful servant."

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

*Bowman Gray School of Medicine
of Wake Forest College*

A boy born on April 19, 1929, was admitted to the hospital on May 25, 1932, and died on June 13, 1932. The chief complaint on admission was a sore mouth and prominence of the eyes for two years. When the patient was 1 year of age, the mother noticed a "cradle-cap" eruption which spread over the whole head and down the neck. This condition, eventually called "eczema", persisted to the time of admission. It cleared at times and then returned. Also at the age of 1 year the child's mouth became sore; he drooled constantly and the gums became spongy and red and bled a great deal. The teeth became decayed and loose, so that they could easily be pulled out. Some of the teeth were extracted by a dentist. At the age of 2 years it was noticed that the eyes were prominent. They became increasingly so, the right more than the left. For the four weeks prior to admission the eyes had been red, swollen and watery. Thirst had been marked for the past four to six months. The child would drink anything, including water from a vase of flowers. He ate little solid food.

Physical examination on admission showed the temperature to be 101.6 F., the pulse rate 160, the respiratory rate 28, and the blood pressure 94 systolic and 58 diastolic. The patient was undersized, underdeveloped and emaciated. He was cachectic and apathetic and appeared to be chronically ill. He presented a picture of complete misery, and spoke only to demand water, which he did frequently. The marked exophthalmos and yellowish pallor were his most striking characteristics. There were dry scabs of infected eczematous lesions all over the scalp. A partly discrete and partly confluent papular eruption was seen over the back and the left side of the thorax. The skin was pale, yellowish and dry. The mucous membranes were pale. All of the teeth were missing except the upper incisors, which were loose and unhealthy. The gums were soft, irregular and

retracted. Both the liver and the spleen were enlarged. The spleen was felt as a large firm mass extending three fingerbreadths below the costal margin, and was somewhat tender. The edge of the liver was also felt three fingerbreadths below the costal margin.

The hemoglobin varied between 5.6 Gm. (35 per cent Sahli) and 13.2 Gm. (78 per cent Sahli) per 100 cc. The red blood cell count varied from 2,160,000 to 4,500,000. The white cell count was always between 3000 and 4000. The polymorphonuclear leukocytes varied from 23 to 58 per cent, and the lymphocytes from 40 to 77 per cent. The platelet counts were as follows: May 28, 184,000; May 30, 110,000; June 6, 30,000; June 10, 22,000. The blood chemistry was as follows: nonprotein nitrogen, 36.3 mg. per 100 cc.; chlorides, 567 mg.; sugar, 97 mg.; calcium, 9.6 mg.; phosphorus, 4.8 mg.; cholesterol 179 mg.; albumin 3.49 per cent; globulin 2.07 per cent; and fibrinogen 0.492 per cent. The carbon dioxide combining power of the plasma was 41.6 per cent by volume. The van den Bergh reaction was negative. Blood cultures on May 26 and 28 showed no growth. The specific gravity of the urine was 1.007. Many double refractile lipoids were seen.

Upon roentgen examination multiple areas of diminished density varying from 1 mm. to 3 cm. in diameter were seen scattered through the bones of the skull. The contours of these areas were multiform; the borders were fairly sharply demarcated, and the outer and inner tables and the diploic space were seen to be involved. The body of the sphenoid was also definitely involved, with destruction of the anterior portion of the floor of the sella turcica. Both the anterior and the posterior clinoid processes were small and blunted. The mandible was also markedly involved, with several large, irregular areas of diminished density in the body of the mandible on the right. Many tooth buds, both temporary and permanent, had been lost. Multiple extensive areas of diminished density were present in the scapulae and in the ilia. The body of the right ischium showed multiple areas of diminished density. Both pubic bones were free from involvement. Both femurs showed multiple small and large areas of diminished density. They could be seen clearly and lay within the medullary cavity, resulting in erosion of

We are indebted to Dr. Katharine Merritt, of the Babies Hospital, New York, for the clinical abstract of this case and for permission to publish it.

the inner surface of the overlying cortex. Two of the ribs showed areas of diminished density similar to those seen in the other long bones.

The child was given a transfusion of 120 cc. of whole blood, and roentgen therapy was applied to the skull, but without success. He died three weeks after admission.

Discussion

DR. TINSLEY R. HARRISON: Because of the history of a sore mouth and spongy and bleeding gums in this case, the first condition that comes to mind is scurvy. However, scurvy does not explain the rest of the picture.

The enlarged spleen and rapidly developing thrombocytopenia are suggestive of primary purpura. On the other hand, there is no note of bleeding except from the gums, and I am not aware of any form of purpura characterized by exophthalmos, diabetes insipidus and lesions of the bones. The same objections apply to a diagnosis of primary splenic neutropenia, which would account for the splenomegaly and the persistent leukopenia, but which could not explain the remaining findings.

If the deficiency in platelets and in white cells cannot be attributed to increased activity of the splenic reticulo-endothelial system with phagocytosis of these blood elements, one naturally thinks of a panmyelophthisis of the bone marrow as the basis for these changes in the peripheral blood. Among the causes of such a condition the neoplastic diseases take first rank, and there are in fact several disorders characterized by tumor formation which involve the bone marrow and have an especial predilection for the orbits and, hence, a tendency to produce exophthalmos. One of these conditions is chloroma, which is now generally believed to be a special form of myeloid leukemia, in which the blood picture is usually of the aleukemic type. This is a disease of infants or young persons and frequently involves the orbits, producing exophthalmos. It may also be associated with lesions in the other bones similar to those found in this patient.

Another neoplastic disease which comes immediately to mind is the so-called neurocytoma of the adrenals. This condition, which usually appears in infants, leads to orbital metastasis, and there may be extensive bone marrow involvement with myeloph-

thisis. One would expect both chloroma and adrenal neurocytoma to be accompanied by some enlargement of the lymph nodes of the neck, which was not mentioned in this patient. Furthermore, diabetes insipidus is not commonly observed in patients with these conditions, although there is no reason why it could not occur in an occasional case, with disease of the bones at the base of the skull causing extension into or pressure on the pituitary or hypothalamic region of the brain stem. The splenic enlargement is against the diagnosis of neurocytoma of the adrenal, but one has to remember that the mass which was interpreted clinically as an enlarged spleen might have been an enlarged adrenal gland.

The description of the radiologic appearance of the bones is entirely compatible with multiple myeloma. In this disease one would, however, expect to find a change in the albumin-globulin ratio of the blood. Most of the patients with myelomatosis have a well-marked increase in globulin, both relative and absolute. The absence of lymph node enlargement makes the diagnosis of Hodgkin's disease or other forms of lymphoma improbable, although it does not entirely exclude such a condition.

The triad of fever, multiple lesions of the bones, and long-standing skin lesions bares a superficial resemblance to the clinical picture seen in patients with some of the fungus diseases. These may, when they involve the skull, produce exophthalmos. If there were infestation with the actinomyces or the blastomyces, one would rather expect to find some evidence of sinus formation. Such evidence is lacking in this case. Histoplasmosis is commonly associated with enlargement of the spleen, leukopenia and fever, but in none of the few cases which I have seen were there such extensive lesions of the bones as those presented by this patient.

The presence of multiple punched-out, cystic-appearing bone lesions makes one think of hyperparathyroidism, and more particularly, of that form known as von Recklinghausen's disease of the bones. However, in such patients exophthalmos, diabetes insipidus and enlargement of the spleen and liver are rare, if they occur at all.

There is another group of diseases which should be thought of whenever one sees an infant with enlargement of the liver and spleen and disease of the bones. This group

of diseases is characterized by abnormality of the intracellular metabolism of lipoids. The exact mechanism of the disturbance is unknown. Possibly deficiency of certain enzymes, which normally split some of the lipoidal substances, may be a factor. In any case, these disorders are characterized by the accumulation of excessive quantities of lipoidal substances within the cells of the reticulo-endothelial system. In some instances the substance which accumulates is sphingomyelin. This disorder, which is known as Niemann-Pick disease, occurs almost exclusively in infants in the first two years of life. Enlargement of the liver, spleen and lymph nodes occurs. There is also pigmentation of the skin and a curious bluish-black pigmentation of the mucous membrane of the mouth. There is retardation of physical development and even more of mental development, so that the affected child has an appearance resembling that of a Mongolian idiot. Death occurs within the first several years. Involvement of the bones is rarely extensive in patients with the Niemann-Pick disease, and this fact makes it improbable that this disorder existed in the patient under discussion.

Another type of disturbed lipoidal metabolism is that known as Gaucher's disease. Here the fatty substance which accumulates within the cells is of cerebrosidal nature, and the condition is therefore known as reticulo-endothelial cerebrosidosis, just as Niemann-Pick disease may be called reticulo-endothelial sphingomyelosis. The patient with Gaucher's disease presents striking enlargement of the spleen, and there is usually moderate to marked enlargement of the liver. Osteoporosis is a characteristic feature and the weakening of the bones leads to thinning of the middle part of the shaft with enlargement of the lower end of the long bone, which therefore, when seen in the x-ray, resembles an Erlenmeyer flask. There is frequent and irregular patchy, brown pigmentation of the skin and also brownish pigmentation of the corneal margins of the conjunctivae. Thrombocytopenia with symptomatic purpura and leukopenia is common. This disease may occur in infants, but more often appears in young adults. It has to be considered in the patient under discussion here, but since cyst-like, punched-out areas of the bones are rare, and neither diabetes insipidus or exophthalmos is commonly observed in Gaucher's

disease this condition is unlikely in this case.

Both sphingomyelosis and cerebrosidosis are rare diseases. However, there is a somewhat similar intracellular metabolic disturbance which is much more common. I refer to xanthomatosis, a disorder characterized by the accumulation of cholesterol in reticulo-endothelial cells. Xanthomatosis may occur in almost any organ of the body, and the clinical pictures which may be so induced are numerous and often puzzling. Skin lesions occur in many cases. These may consist of simple yellowish discoloration, usually most pronounced on the palms and soles (xanthosis); of flat yellowish patches which are likely to be outspoken in the creases of the fingers (xanthoma planum); of scattered, warty lesions, also yellow in color (xanthoma tuberosum); of discrete or confluent brownish or dark red papular lesions, usually most striking in the axilla and on the back (xanthoma disseminatum); or even of ulcerative lesions, as seen, for example, in necrobiosis diabeticorum. Xanthomatous tumors on the tendon also may occur.

Occasionally the disease affects the cardiovascular system, producing warty, yellowish changes in the valves or, more commonly, atheromatous lesions in the blood vessels and particularly in the coronary arteries. This form of xanthomatosis frequently occurs in families and may lead to angina pectoris, sudden death or coronary occlusion in several young persons in the same family.

An interesting and usually puzzling type of xanthomatosis is biliary cirrhosis. Here there may be either diffuse deposits of the typical xanthoma foam cell scattered throughout the liver, or there may be extensive atheromatous-like lesions in the bile ducts, leading to obstruction, dilatation, and secondary changes in the liver. The characteristic clinical features of xanthomatous biliary cirrhosis are as follows: The patient usually has long-standing, painless jaundice, which has endured for several years. The liver and spleen are commonly enlarged. Hypercholesterolemia of greater or lesser degree occurs in practically all the patients. (Unfortunately, this is not the case with all forms of xanthomatosis. When it occurs hypercholesterolemia is of great aid in making the diagnosis, but its absence signifies nothing, as there are a number of types of xanthomatosis in which the level of blood cholesterol is characteristically normal.) Most of the patients

with xanthomatous biliary cirrhosis have xanthomatous lesions of the skin as well. In the absence of these the diagnosis may be very difficult, and, in fact, the condition is usually mistaken for a stone or a tumor causing obstruction of the common bile duct.

Xanthomatous involvement of the lungs may give rise to a picture resembling either recurrent pneumonia, chronic pneumonitis, pneumoconiosis or tuberculosis.

There is one form of xanthomatosis which is of particular interest in regard to this patient. This is the disorder first described by Hand and later discussed in more detail by Schueller and by Christian. The condition is ordinarily known as the Schueller-Christian disease. The three cardinal clinical features of this disorder are exophthalmos, diabetes insipidus and defects of the membranous bones of the skull. All of these manifestations are due to replacement of the bone by the typical cholesterol-containing foam cells. The exophthalmos is due to the accumulation of such cells in the orbital bones, and the diabetes insipidus is due to pressure on the pituitary stalk or on the hypothalamus by such lesions either of the bone directly or of the dura. Other features of the Schueller-Christian disease which are less constant are falling out of the teeth, sponginess and bleeding of the gums as the result of disease of the jawbones, fever, otitis media and mastoiditis as the result of disease of the bones in this region, and skin lesions, which usually take the form of xanthoma disseminatum.

In patients with the Schueller-Christian disease, enlargement of spleen, liver and lymph nodes frequently occurs, but none of these manifestations are constant. The most constant manifestations of the syndrome are exophthalmos, diabetes insipidus, and defects in the bones of the skull. Our patient presented all of these findings as well as a number of other features such as leukopenia and thrombocytopenia, which are not typically found in the Schueller-Christian syndrome. However, there is no reason why these abnormalities in the peripheral blood should not occur if the invasion of bones is sufficiently extensive to replace much of the hematopoietic tissue. The report on the x-ray studies indicates clearly that in this patient such could have been the case. I therefore think that we have to consider the changes in the peripheral blood as a panmyelophthisis resulting from extensive invasion of the bone

marrow with the xanthomatous cells. In most respects this case presents a typical and classic picture of the Schueller-Christian disease, and one would be very much surprised to find any other condition at the autopsy.

Pathological Report

DR. ROBERT P. MOREHEAD: Autopsy examination revealed extensive bone destruction in the areas noted in the roentgenological examination, normal bony tissue being replaced by irregular masses of bright yellow tissue. A wedge-shaped mass of the same tissue was seen in the dura and similar masses were present in the sella turcica. Involvement of the latter, with secondary changes in the hypophysis, readily explains the diabetes insipidus. Bilateral retro-orbital masses were present, producing exophthalmos. The anemia, leukopenia, and thrombocytopenia were the result of extensive bone marrow involvement. The thymus, pleura, lungs, pericardium, and mesenteric and peripancreatic lymph nodes were also the site of the extensive infiltrative process. The spleen weighed 340 Gm.

Microscopic examination showed the infiltrating tissue to be everywhere identical and to be composed of phagocytic cells filled with cholesterol. This is unquestionably the condition described by Hand, by Christian, and by Schueller.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Contracts: Agreements in restraint of business between professional men are valid and enforceable if reasonable. They must not be against public policy.

This was a civil action brought by the plaintiff, a physician, to enjoin the defendant, another physician, from engaging in the practice of medicine in a restricted territory for a limited time in violation of an agreement with the plaintiff.

The plaintiff, an ear, eye, nose and throat specialist, practiced his profession for more than twenty-five years in a certain county in this state. His practice was large and lucrative, well established and covered a wide territory. The fact that the plaintiff's practice covered a wide territory should be remembered, as it had a bearing upon the decision of the appellate court. On or about the first of May, 1938, the defendant came to the town in which the plaintiff resided and was employed as an assistant in the office of the plaintiff at a salary of \$75.00 a week, with the understanding that if the employment proved unsatisfactory, the defendant "was not to practice medicine in _____ town or within 100 miles thereof for a period of five years after the employment ceased." About a year later, the plaintiff and

defendant, at the solicitation of the latter, formed a partnership for the practice of their profession under an agreement containing provisions for division of profits, etc., with a stipulation that either might dissolve the partnership on ninety days written notice.

It was stipulated in the agreement between the partners that in the event of a dissolution of the partnership the junior partner, the defendant in this case, would not engage in the practice of his profession in the home town of the plaintiff or within one hundred miles thereof for a period of five years from the dissolution of the partnership. It was admitted that upon written notice the partnership was dissolved on January 23, 1940, and that, thereafter, in disregard of the above covenant, the defendant opened an office in the above mentioned territory for the practice of medicine, limited to diseases of the ear, eye, nose and throat. Both the plaintiff and defendant had limited their practice to this field of medicine.

The senior partner brought action to enforce compliance with the terms of the partnership agreement, and an order to show cause was duly issued. Upon return of this, the defendant was restrained from engaging in the practice of medicine in the above mentioned territory, or within a one hundred mile radius, until the final hearing of the case on its merits. From the signing of this order by the judge the defendant appealed.

When this case came on to be heard before the Supreme Court it was the duty of this tribunal to decide whether the provisions of the contract were reasonable. The test applied to determine the reasonableness of restrictive covenants is to consider whether the restraint affords only a fair protection to the interest of the party in whose favor it is given and is not so broad as to interfere with the rights of the public. If found reasonable, as they were in this instance, the restrictions are legal and enforceable. A restrictive contract such as this which has been found to be reasonable is not against public policy.

Upon first thought, it would seem that the area referred to in the agreement included more territory than would be necessary to protect any type of medical practitioner except, of course, one of national fame, but it was brought to the attention of the Court that the practice of the plaintiff was "large and lucrative, well established and covered a wide territory." Because of this fact a radius of one hundred miles was not thought to be excessive.

In any event, it should be gratifying to doctors to know that the courts have a tendency to protect the good will built up by professional men, and to look upon that interest as a species of property. However, if an agreement such as this infringed upon the rights of the people included within the area mentioned and deprived them of the necessary professional service the contract would be against public policy and void.

The order of the lower court in this case was affirmed. (North Carolina Supreme Court, v. 217, p. 670. Decision rendered spring term, 1940.)

Marry and Live Longer. Among industrial policy holders of an insurance company, tuberculosis accounted for 19.1% of all deaths among single males between the ages of 20 to 44, but only for 11.4% of the deaths among the married. The proportion of deaths from tuberculosis is even higher among the widowed, namely 23.1%. The rates for alcoholism, accidents and syphilis are also higher among the single and widowed than among the married. Editorial, Med. Record, March, 1942.

MILITARY MEDICINE

OCd URGES RECRUITMENT OF MORE NURSES' AIDES

The Civilian Mobilization Branch of the Office of Civilian Defense recently issued a memorandum to its regional representatives urging a concerted effort to stimulate the recruitment and enrollment of Nurses' Aides so as to relieve the serious shortage of nursing personnel in hospitals.

A report dated June 20 showed that 25,905 Nurses' Aides had been enrolled, of whom 12,890 had been certificated. This is only one fourth of the 100,000 set as a goal at the beginning of the campaign in the summer of 1941. Reports from all parts of the country indicate that the training has been well carried out and the Nurses' Aides are now giving valuable service in their assignments.

Dr. S. D. Craig of Winston-Salem, President of the State Board of Health, has been commissioned in the U. S. Army and stationed in State Ocd Headquarters as Chief of the North Carolina Emergency Medical Service, a division of Civilian Defense now being developed rapidly. Dr. Craig is now making a survey of hospital and blood bank facilities.

NEWS NOTES FROM FORT BRAGG

The removal of the FARC School to permanent quarters has left the way open for great improvements in the Field Artillery Replacement Center. Until the FARC School was consolidated in its own area, the building which houses the Center Surgeon's office was used also for classrooms for the instruction of officer candidates. Now it has become possible for the Center Surgeon's office to be expanded into a genuinely central dispensary. The Center Surgeon's headquarters will function hereafter not only as an administrative and coordinating agency, but as an active examining and laboratory unit in the medical organization of the Replacement Center.

NATIONAL NURSING COUNCIL FOR WAR SERVICE

To help employing agencies and the individual nurse make wise decisions, the National Nursing Council for War Service has set up categories of those nurses who should go and those who, for the present at least, should stay. The list of these categories, presented in "Nurses, to the Colors!" has been worked out by the Council's Committee on Supply and Distribution under the chairmanship of Katherine Tucker, Director of Nursing Education, University of Pennsylvania. It has the approval of the Health and Medical Committee of the Federal Office of Defense Health and Welfare Services and its Subcommittee on Nursing, and of the American Red Cross. We feel it comes as near to achieving a consensus among authorities as may be reached.

In spite of the apparent shift of the peak of mortality toward the older age groups, tuberculosis is still second in importance as a cause of death among men 20 to 34 years of age, while the highest incidence of morbidity from tuberculosis is still in the age group 15 to 29. In most cases in which tuberculosis is diagnosed at a late age, it could have been diagnosed earlier had the patients been examined at, or about, the age of 30. R. E. Plunkett, M.D., War Medicine, Sept.-Oct., 1941.

BULLETIN BOARD

PRESIDENT'S MESSAGE

North Carolina's Medical Contribution to the National War Effort

Since Pearl Harbor there have been direct accusations and insinuations that the medical profession has not been responding to the call of its country, that the doctors have been lying down on the job. These have been made not only before medical meetings and in medical journals, but also in the daily press and periodicals. As a result of this, the profession and the laity have been made to believe that the physicians are not doing their duty in our great national emergency.

The doctors of the country were given to understand that they were to volunteer their services through the Procurement and Assignment Service, which was set up for this purpose. There are 180,000 physicians practicing in the United States. Of this number, 130,000, or approximately 75 per cent have expressed their willingness to serve their country in whatever capacity the Procurement and Assignment Service thinks best. In view of this fact, it is difficult to understand such wholesale indictment of the profession.

But if the exigencies of the times made such an accusation seem necessary, it is regrettable that those who spoke with authority did not see fit to qualify their statements. While there may be certain states that have been slow to fill their medical quota, there are others that have not only met, but have surpassed, what was expected of them.

In our minds there has never been any doubt that North Carolina would meet its every obligation now, as always in the past. We can be proud that our state was among the first group of states to complete their quotas of physicians serving in the Army for this year.

Such an accomplishment is not only evidence of the efficiency of our State Chairman of the Procurement and Assignment Service, Dr. Haywood, and of the unselfish cooperation of the various County Committees that worked with him, but also is an indelible record of the patriotism of the doctors of North Carolina.

In meeting this obligation it has been possible to hold intact the staffs of essential hospitals, teaching institutions and health departments; rural communities have not been

deprived of adequate medical care; and the ratio of physicians to population in cities has nowhere fallen below the minimum coverage of one effective doctor to 1,500 people.

In addition to meeting our requirements for the armed forces, the physicians of North Carolina have examined and are still examining all recruits for the Army without any cost to the Government.

It is with pride and satisfaction that we can point to the fact that all male high school junior and senior students, both white and colored, have been given physical examinations by the doctors without cost to the students or to the school system. This was done at the request of Governor Broughton. As a result of these examinations, recommendations have been made for the correction of remediable defects.

Although we can view these accomplishments with real satisfaction, let us remember that the responsibility of our profession will continue and will grow greater. For our country the war seems to have just begun. Although our tentative quota of doctors for the Army for this year seems to have been filled, the Army is still accepting medical volunteers. We know we shall meet our obligations in the future with the same patriotic cooperation with which we are meeting them today.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Newspaper articles to the effect that soft drink chisellers in the vicinity of Camp Davis and Fort Bragg have been brought under the scrutiny of the Office of Price Administration bring to mind another form of violation, which will be dealt with in due course.

"Reports have reached me to the effect that soft drink dispensers are charging extra for paper containers. Investigation has disclosed that this is true in some instances, and if the practice is not discontinued at once, names of those engaging in this practice will be made public," Dr. Reynolds continued.

I have already taken this matter up with the Office of Price Administration in Washington, and from Henry S. Reuss, assistant general counsel, I have just received a letter to the effect that:

"We know of no tax on paper containers. There have been no price increases since the issuance of the General Maximum Price Regulation, and there is no excuse for retailers to charge for these containers.

"We desire to be informed of any persons who are violating the General Maximum Price Regulation by now charging for containers, and we assure you we shall take appropriate action."

"Such a practice puts a penalty on sanitation," Doctor Reynolds said, "and it tends to tear down what it has taken a quarter of a century to build up. Hence, it is a menace to public health which we do not propose to condone, besides being an injustice to the purchasing public."

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

On June 20, the Alamance County Sanatorium had its formal opening. Dr. P. P. McCain gave the principal address. His topic was "The Development of Sanatoria in North Carolina and Their Importance in the Control of Tuberculosis". This sanatorium has a capacity of 30 beds, 22 for white and 8 for colored. Dr. F. T. Harper will be the medical director and Miss Ialeen Andrews the superintendent of nurses.

* * *

The Forsyth County Tuberculosis Association has recently employed Mrs. C. O. De Laney as full-time secretary with an office in the Wachovia Bank Building. Mrs. De Laney comes to this position well qualified as to training and experience. She is a graduate of Army School of Nursing, Walter Reed Hospital, Washington, D. C., had an undergraduate course in Public Health at Columbia University and Henry Street Settlement, New York, and has just received a B. S. Degree in Public Health Nursing at the University of North Carolina.

There are now three county tuberculosis associations with full-time health education workers, Wake, Durham, and Forsyth, and one city association, Greensboro.

* * *

The Committee on Qualifications of the National Tuberculosis Association reports that the North Carolina Tuberculosis Association has met all requirements again this year and is entitled to have a representative director on the Board of the National Association. Dr. C. D. Armstrong, Health Officer of Salisbury was chosen for this Director.

Dr. J. Burns Amberson, Jr., President of the National Association has recently appointed two persons from North Carolina on the Committee on Negro Program. These are Dr. P. P. McCain, Chairman of this Committee, and Frank W. Webster

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. George T. Harrell, Jr., Associate Professor of Medicine, attended the course in the Medical Aspects of Chemical Warfare given under the direction of the medical division of the Office of Civilian Defense at the University of Cincinnati Medical School, July 24, 25, and 26.

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Society had as its guest speaker on July 20 Dr. W. W. Vaughn, Radiologist at Watt's Hospital in Durham. Dr. Vaughn's subject was "A Correlation of Gastroscopic and Roentgenologic Findings, Especially in the Surgical Stomach".

CATAWBA VALLEY MEDICAL SOCIETY

The Catawba Valley Medical Society held its regular meeting at the Nurses' Home of Grace Hospital in Morganton on July 21. Dr. Grace Jones of Lincolnton spoke on "Abdominal Pain" and Dr. John Elliott of Salisbury spoke on "Recent Work on Stored Blood, with Particular Reference to Its Use by the Armed Forces".

DAVIDSON COUNTY MEDICAL SOCIETY

The Davidson County Medical Society held a dinner meeting in Lexington on July 1. Dr. H. H. Bradshaw, Professor of Surgery at the Bowman Gray School of Medicine, was guest speaker. His subject was "Carcinoma of the Stomach".

REGIONAL MEETING OF AMERICAN COLLEGE OF PHYSICIANS POSTPONED

The officers and members of the program committee of the North Carolina College of Physicians have announced that the regional meeting of the College scheduled to be held in Winston-Salem in October has been indefinitely postponed because of difficulties in transportation and other conditions brought about by the war.

WAR MEETING OF SOUTHERN MEDICAL ASSOCIATION

It has been announced that the meeting of the Southern Medical Association scheduled to be held in Richmond November 10, 11, and 12, will not be called off, but will go ahead as planned. Surgeons General James C. Magee, Ross T. McIntire, and Thomas Parran have expressed a belief that the Southern Medical Association meeting can make a significant contribution to the war effort. Hotel reservations for the convention should be made through the Hotel Committee, Southern Medical Association, 109 North Fifth Street, Richmond, Virginia.

THE AMERICAN COLLEGE OF PHYSICIANS WILL HOLD ITS 1943 SESSION IN PHILADELPHIA, APRIL 13-16, 1943

The American College of Physicians has announced its 27th Annual Session to be held in Philadelphia, Pa., April 13 to 16, inclusive, 1943. Heretofore, the College has held a five-day Session, but in the interest of conserving time and expense of its members, the program will be condensed into four days, Tuesday through Friday. Dr. James E. Paulin, Atlanta, as President of the College, will have charge of the program of General Sessions and Lectures. Dr. George Morris Piersol, Philadelphia, as General Chairman, will be responsible for the program of Hospital Clinics, Panel Discussions, local arrangements, entertainment, etc. The general management of the session and technical exhibits will be handled by the Executive Secretary, Mr. E. R. Loveland, 4200 Pine St., Philadelphia.

ANNOUNCEMENT FROM THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC.

Checks totaling \$325,844.25 have been forwarded to 26 institutions in various parts of the United States and Canada to carry on virus and after-effects research work and education in the fight against infantile paralysis, according to an announcement made by Basil O'Connor, president of the National Foundation for Infantile Paralysis, Inc.

* * *

A five year, \$300,000 grant has been made to the Johns Hopkins University, Baltimore, for an intensive and long time study of the disease of infantile paralysis.

This is the largest single grant made by the National Foundation since it was organized in 1938. It will be used to establish and conduct the Center for the Study of Infantile Paralysis and Related Viruses at the Hopkins. The funds which make this and other research projects of the National Foundation possible are contributed each year at the time of the national celebration of the President's birthday.

COURSE FOR PHYSICAL THERAPY TECHNICIANS

Columbia University announces that beginning September, 1942, a program of professional studies for the training of Physical Therapy technicians will be offered. This training and instruction will extend over a two-year period and has been organized in compliance with the requirements set down for such programs by the Council on Medical Education and Hospitals of the American Medical Association.

A Certificate of Proficiency in Physical Therapy will be granted by Columbia University to those completing the course. Further information may be obtained by writing the Office of the Committee on Physical Therapy, Room 303B, School of Business, Columbia University, New York City.

ANNOUNCEMENT OF FELLOWSHIPS IN MEDICINE AND PUBLIC HEALTH

Offered by the Commonwealth Fund of New York
Through the Pan American Sanitary Bureau

The Commonwealth Fund of New York, a philanthropic foundation established in 1918 by the late Mrs. Stephen V. Harkness, announces that it is offering through the Pan American Sanitary Bureau fifteen fellowships for one year's study of public health subjects or postgraduate medical courses to properly qualified persons who are citizens of the other American republics. Fellowships in public health will be open to physicians, sanitary officers, technicians, public health nurses, etc.

Application blanks giving complete information will be available through the Commonwealth Fund, 41 East 57th Street, New York; the Pan American Sanitary Bureau, Washington, D. C.; or chiefs of American Missions in Latin America.

NEWS NOTES

Dr. Merle D. Bonner, Jamestown, has been elected as a Governor of the American College of Chest Physicians at the annual meeting of the College held at Atlantic City, June 6-8, 1942. Dr. Karl Schaffle, Asheville, was elected as Regent of the College at this meeting also.

Tuberculin testing in a secondary school in Canada disclosed that out of 16 pupils who used the school bus 15 reacted positively to tuberculin, and one proved to be in the early stage of tuberculosis when X-ray examination was made. The driver of the bus, when examined, was discovered to be an open case of tuberculosis. Thirteen of the children were the only positive reactors in their respective families. The report of this investigation was made by Dr. William D. Hay to the Canadian Public Health Assn., Dec. 1941. Can. P. H. Jour., Jan. 1942.

Collapse therapy is not a panacea for pulmonary tuberculosis. It is a valuable adjunct when used in conjunction with the time-proven principles now in common practice. Every patient should have the benefit of mature judgment to determine the possibilities of expediting recovery by the use of compression methods. An early diagnosis, however, together with the intelligent selection of therapeutic measures, offers a patient the best chance of recovery. C. Howard Marcy, M.D. Pennsylvania's Health, December, 1941.

AUXILIARY

A MESSAGE FROM THE PRESIDENT

North Carolina has been honored by the election of Mrs. Sidney Smith of Raleigh as a vice president of the Woman's Auxiliary to the American Medical Association. This is the first time that such an honor has been conferred upon a woman from our state. We are indeed proud to announce the national recognition of the outstanding work of Mrs. Smith, our immediate past state president. During her administration the State Auxiliary showed marked progress and the report from North Carolina was the best in the Southern Region.

Through the wise planning and leadership of Mrs. Smith, our State Auxiliary starts the new year with a strong organization made up of women who are eager and willing to serve. We are happy to welcome several new members to the Board who, we feel, will make a definite contribution to our program, and we are looking forward to a year of pleasant association and constructive work.

With pride and appreciation the president announces the names of the members of the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina for the year 1942-1943.

Executive Board

President—Mrs. R. A. Moore
Honorary President—Mrs. P. P. McCain
President-Elect—Mrs. K. B. Pace
First Vice President—Mrs. Sidney Smith
Second Vice President—Mrs. Charles Gay
Third Vice President—Mrs. J. L. Reeves
Fourth Vice President—Mrs. A. H. Elliott
Recording Secretary—Mrs. James Vernon
Corresponding Secretary—
Mrs. R. L. McMillan
Treasurer—Mrs. E. C. Judd
Advisory Board Chairman—

Dr. P. P. McCain
North Carolina Councilor to the Southern
Medical Auxiliary—Mrs. Clyde R. Hedrick
Chairmen of Standing Committees:
Program—Mrs. Joseph A. Elliott
Public Relations—Mrs. Wingate Johnson
Legislative—Mrs. Rigdon Dees
Press and Publicity—

Mrs. Verne S. Caviness

Bulletin—Mrs. Ben Kendall

Hygeia—Mrs. W. G. Byerly

Memorial—Mrs. Vernon C. Lassiter
 Historian—Mrs. J. Roy Hege
 Exhibits—Mrs. C. B. Davis
 Research—Mrs. John B. Ray
 Scrapbook—Mrs. Ben F. Royal
 Jane Todd Crawford Memorial—

Mrs. Harry Winkler

National Defense—Mrs. John C. Reece
 Doctor's Day—Mrs. R. S. McGeachy
 Nominations—Mrs. J. Buren Sidbury

Councilors:

First District—(to be appointed)
 Second District—Mrs. Oscar A. Kafer
 Third District—Mrs. D. M. Royal
 Fourth District—Mrs. C. F. Strosnider
 Fifth District—Mrs. A. L. O'Briant
 Sixth District—Mrs. P. G. Fox
 Seventh District—Mrs. G. Aubrey Hawes
 Eighth District—

Mrs. Edward T. Harrison

Ninth District—Mrs. Alfred A. Kent, Jr.
 Tenth District—Mrs. D. I. Campbell King

As we begin our work for another year, may we realize the additional responsibilities placed upon our organization in these critical times. With so many of our doctors leaving for the service, thereby placing additional burdens upon the ones left at home, we, the wives of doctors, will also find new fields of service. In the words of Dr. Nathan B. Van Etten, "Defense against disease is as important as defense against a foreign military enemy. Defense of the nation's health is vital to all other defensive forces, but any defensive program will fail to reach its high objective unless it is supported by a vigorous offensive which will arouse the public conscience. The American doctor is fundamentally and earnestly patriotic. The doctor's wife stands by his side with high courage, and both will carry on in the best tradition, the battle for the American way of life and the spirit of free democracy."

May we, the members of the Board of Directors of the Auxiliary to the State Medical Society, pledge ourselves to direct the activities of this organization to fit accurately and effectively into the program of National Defense.

MRS. R. A. MOORE,
President

BOOK REVIEWS

Treatment in General Practice. By Harry Beckman, M.D., Professor of Pharmacology, Marquette School of Medicine, Milwaukee, Wisconsin. Fourth Edition, thoroughly revised. 1015 pages. Price, \$10.00. Philadelphia & London: W. B. Saunders Co., 1942.

The appearance of a fourth edition of Beckman's treatise on therapeutics, which first appeared in 1930, is ample evidence of its popularity. It is refreshing to find so excellent a contribution emanating from a department of Pharmacology which, in so many of the outstanding American medical schools, has deteriorated to the point of insignificance. Dr. Beckman's contribution to therapeutics is, in the reviewer's opinion, far superior to the books on this subject written by clinicians. It is unusually complete and includes enough historical and factual data about the conditions, the treatment of which is described, to make it an easily readable treatise. The principal defect in the book, in the reviewer's opinion, is the inclusion of trivia which the author usually evaluates properly, but which could have been omitted entirely, thereby reducing the size and increasing the usefulness of the book. This is a minor fault and the book will be a profitable and useful acquisition for the general practitioner.

The War Gases, Their Identification and Decontamination. By Morris B. Jacobs, Ph.D., Chemist, Department of Health, City of New York. 180 pages. Price, \$3.00. New York: Interscience Publishers, Inc., 1942.

In the all-out modern warfare in which we are now engaged it is essential that the civilian population be prepared for any eventuality. Although the use of poison gas is outlawed by international law, no one is so naive as to believe that it would not be used by our unscrupulous enemies, should it prove to their advantage. The volume under review is indeed timely. It describes in an elementary, yet complete manner the detection, sampling and identification of the chemical warfare gases. Methods for the decontamination of affected areas and materials are also given. The book can be recommended as essential for gas identification and decontamination. It should be in the hands of all health officers as well as air raid wardens and physicians who wish to be prepared for any eventuality.

The National Formulary. Seventh Edition. Prepared by the Committee on National Formulary, American Pharmaceutical Association, Washington, D. C., 1942.

This new seventh edition of the National Formulary becomes official from November 1, 1942, replacing the sixth edition which appeared in 1936. The main body of the book is devoted to monographs on drugs, chemicals and preparations used in pharmaceutical practice. Appended to these are directions for preparing reagents used in the clinical laboratory and descriptions of the general tests, processes and apparatus referred to in the monographs of the Formulary.

(BOOK REVIEWS CONTINUED ON PAGE 484)

TRANSACTIONS
OF THE
MEDICAL SOCIETY
OF THE
STATE OF NORTH CAROLINA



EIGHTY-NINTH ANNUAL SESSION

...held at...

CHARLOTTE, NORTH CAROLINA

MAY 11, 12, 13, 1942

President, F. Webb Griffith, M. D., Asheville
Secretary-Treasurer, Roscoe D. McMillan, M. D., Red Springs

EARLY HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM ORGANIZATION TO 1804

Date	Place	President	Vice Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1942

*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents*	Secretary	Treasurer*	Members in Roll*	Honorary Members*	Honorary Fellows*
1849	Raleigh	25	F. J. Hall		W. H. McKee		25		
1 1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas	W. H. McKee	W. G. Hill	38	9	
2 1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	0	
3 1852	Wilmington	35	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman	E. B. Haywood	J. J. W. Tucker	72	12	
4 1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman	W. W. Harris	Daniel Dupree	80	14	
5 1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean	S. S. Satchwell	Daniel Dupree	84	17	
6 1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly	S. S. Satchwell	J. B. Dunn	96	18	
7 1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, F. R. Gibson, Johnston B. Jones, O. F. Manson	S. S. Satchwell	J. B. Dunn	101	22	
8 1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson	W. G. Thomas	J. B. Dunn	113	16	
9 1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce	W. G. Thomas	J. B. Dunn	172	18	
10 1859	Statesville	51	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard	W. G. Thomas	C. W. Graham			
11 1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach	W. G. Thomas	C. W. Graham	233	18	
12 1861	Morgantown	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom	W. G. Thomas	C. W. Graham	244	18	
13 1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones	W. G. Thomas	C. W. Graham			
14 1867	Tarboro	41	W. G. Thomas		S. S. Satchwell	C. W. Graham	288	11	
15 1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker	Thomas F. Wood	J. W. Jones			
16 1869	Salisbury	36	F. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke	Thomas F. Wood	J. W. Jones			
17 1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne	Thomas F. Wood	J. W. Jones			
18 1871	Raleigh	35	Hugh Kelley	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby	Thomas F. Wood	J. W. Jones			
19 1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom	James McKee	J. W. Jones			
20 1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, P. T. Jerman	James McKee	H. T. Bahnsen			
21 1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight	James McKee	H. T. Bahnsen			
22 1875	Wilson	60	J. W. Jones	Walker Dehnham, J. A. Gibson, William Little, D. N. Patterson	James McKee	H. T. Bahnsen	148	5	
23 1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Baigh, J. K. Hall	James McKee	H. T. Bahnsen	157	4	
24 1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hall	James McKee	A. G. Carr	177	4	
25 1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, E. A. Sutt	L. J. Picot	A. G. Carr	194	6	
26 1879	Greensboro	109	Clas Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hall	L. J. Picot	A. G. Carr	198	6	
27 1880	Wilmington	105	J. F. Saffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis	L. J. Picot	A. G. Carr	225	6	
28 1881	Ashville	92	R. B. Haywood	J. E. McKee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy	L. J. Picot	A. G. Carr	254	6	
29 1882	Concord	65	Thos F Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald	L. J. Picot	A. G. Carr	297	7	
30 1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead	L. J. Picot	A. G. Carr	310	7	
31 1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long	L. J. Picot	A. G. Carr	348	7	
32 1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr	W. C. Murphy	R. L. Payne, Jr.	424	6	

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1942—Continued

*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents	Secretary	Treasurer	Members on Roll	Honorary Members	Honorary Fellows
1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison	J. M. Baker	R. L. Payne, Jr.	438	7	
1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson	J. M. Baker	R. L. Payne, Jr.	452	7	
1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Van Poole	306	6	
1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long	J. M. Baker	C. M. Van Poole	410	6	
1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth	J. M. Hays	C. M. Van Poole	414	6	
1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Van Poole	422	6	
1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard	J. M. Hays	C. M. Van Poole	431	6	
1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill	R. D. Jewett	M. P. Perry	447	5	3
1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher	R. D. Jewett	M. P. Perry	454	5	3
1895	Goldboro		J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer	R. D. Jewett	M. P. Perry	436	7	3
1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley	R. D. Jewett	M. P. Perry	452	7	3
1897	Morehead City	103	P. L. Murphy	J. B. Walton, A. A. Kent, M. R. Adams, B. L. Long	R. D. Jewett	M. P. Perry	406	6	3
1898	Charlotte	*	Francis Duffy	E. C. Register, A. T. Cotton, J. H. B. Knight, F. H. Russell	R. D. Jewett	M. P. Perry	437	6	21
1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson	Geo. W. Presley	G. T. Sikes	489	6	16
1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard	Geo. W. Presley	G. T. Sikes	482	6	21
1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell	Geo. W. Presley	G. T. Sikes	515	5	18
1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott	Geo. W. Presley	G. T. Sikes	546	5	20
1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson	J. Howell Way	G. T. Sikes	530	6	19
1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Phil	J. Howell Way	G. T. Sikes	1,033	8	17
1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison	J. Howell Way	G. T. Sikes	1,175	8	17
1906	Charlotte	406	E. C. Register	L. B. M. Brayer, W. H. Cobb, Jr., W. O. Spencer	J. Howell Way	G. T. Sikes	1,234	8	16
1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLaughlin, W. F. Hargrove	David A. Stanton	H. McK. Tucker	888	7	16
1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton	H. McK. Tucker	998	7	28
1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees	David A. Stanton	H. McK. Tucker	1,067	7	25
1910	Wrightsville Beach	276	J. A. Burroughs, E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton	David A. Stanton	H. D. Walker	1,080	8	35
1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn	David A. Stanton	H. D. Walker	580	8	45
1912	Hendersonville	296	A. A. Kent	J. P. Monroe, W. P. Horton, J. G. Murphy	David A. Stanton	H. D. Walker	950	8	44
1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse	John A. Ferrell	H. D. Walker	1,133	8	40
1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell	John A. Ferrell	H. D. Walker	1,221	9	68
1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison	Benj. K. Hays	W. M. Jones	1,228	10	79
1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. R. Shuford	Benj. K. Hays	W. M. Jones	1,271	11	81
1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal	Benj. K. Hays	W. M. Jones	1,067	11	81
1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair	Sec.-Treas. Benj. K. Hays	Acting Sec.-Treas. L. B. McBrayer	1,306	11	100
1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. L. A.	Benj. K. Hays	L. B. McBrayer	1,497	12	103
1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning	Benj. K. Hays	L. B. McBrayer	1,491	12	93
1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken		Sec.-Treas. L. B. McBrayer	1,571	12	100
1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long		L. B. McBrayer	1,592	9	101
1924	Raleigh	525	J. V. McGougan	J. L. Spruill, Eugene R. Gleon, D. A. Garrison		L. B. McBrayer	1,604	9	106
1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt		L. B. McBrayer	1,657	10	116
1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass		L. B. McBrayer	1,663	10	107
1927	Durham	653	John Q. Myers	J. W. Carroll, A. Y. Linville, C. H. Cocke		L. B. McBrayer	1,691	10	121
1928	Pinehurst	611	John T. Burrus	G. H. Macon, R. F. Leinbach, W. R. Griffin		L. B. McBrayer	1,738	11	143
1929	Greensboro	671	Thurman D. Kitchin	W. L. Dunn, Asheville, D. T. Tayloe, Jr., Washington, W. D. James, Hamlet		L. B. McBrayer	1,666	11	146
1930	Pinehurst	701	L. A. Crowell	W. B. Murphy, Wm. E. Warren, N. B. Adams		L. B. McBrayer	1,711	11	155

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1942—Continued

Date	Place of Meeting	Number in Attendance	President	President-Elect	Vice Presidents	Sec. Treas.	Members on Roll	Honorary Members	Honorary Fellows
78 1931	Durham	714	J. G. Murphy	M. L. Stevens	C. A. Julian, Greensboro J. W. Davis, Statesville	L. B. McBrayer	1,600	10	164
79 1932	Winston-Salem	740	M. L. Stevens	Jno. B. Wright	C. W. Banner, Greensboro W. W. Sawyer, Elizabeth City	L. B. McBrayer	1,559	10	166
80 1933	Raleigh	714	Jno. B. Wright	I. H. Manning	J. R. McCracken, Waynesville	L. B. McBrayer	1,363	10	181
81 1934	Pinehurst	728	I. H. Manning	P. P. McCain	W. G. Suter, Weldon R. L. Felts, Durham	L. B. McBrayer	1,563	10	210
82 1935	Pinehurst	706	P. P. McCain	Paul H. Ringer	H. D. Walker, Elizabeth City J. F. McKay, Buie's Creek	L. B. McBrayer	1,619	10	212
83 1936	Asheville	583	Paul H. Ringer	C. F. Stroenider	William Allan, Charlotte J. K. Pepper, Winston-Salem	L. B. McBrayer	1,462	10	235
84 1937	Winston-Salem	767	C. F. Stroenider	Winzate M. Johnson	E. S. Bullock, Wilmington C. A. Woodward, Wilson	L. B. McBrayer	1,503	7	253
85 1938	Pinehurst	802	Winzate M. Johnson	J. Buren Sidbury	Jno. F. Brownberger, Fletcher R. B. McKnight, Charlotte	L. B. McBrayer	1,715	7	284
86 1939	Cruise to Bermuda	319	J. Buren Sidbury	William Allan	J. F. Abel, Waynesville C. B. Williams, Elizabeth City	T. W. M. Long	1,605	5	311
87 1940	Pinehurst	835	William Allan	Hubert B. Haywood	M. D. Hill, Raleigh F. Webb Griffith, Asheville	T. W. M. Long	1,661	7	313
88 1941	Pinehurst	755	Hubert B. Haywood	F. Webb Griffith	D. W. Holt, Greensboro T. C. Kerns, Durham	T. W. M. Long (1)	1,700	7	309
89 1942	Charlotte	710	F. Webb Griffith	Donnell B. Cobb	Thos. DeL. Sparrow, Charlotte T. L. Carter, Gatesville	Roscoe D. McMillan	1,837	8	350

†Died during his term of office, succeeded by E. J. Wood, first vice president. ‡Died during term of office. (1) Died during term of office; succeeded by I. H. Manning.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 192-1942

COUNTY	1925	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alamance-Caswell	30	32	33	33	32	29	32	30	31	30	27	34	35	35	42
Alexander a															
Alleghany b															
Anson	5	5	5	6	4	4	9	7	8	7	6	11	10	10	9
Ashe c	6	5	5	5	4										
Avery d	6	6	5	5	5		5	5	5	5	6	4	5	5	4
Beaufort	17	16	18	15	15	12	12	15	10	9	11	12	13	13	16
Bertie	8	6	7	9	8	8	9	11	9	8	8	7	7	7	8
Bladen	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
Brunswick	4	6	2				2	2	3	2					
Buncombe	120	118	113	112	105	83	107	115	109	98	103	111	108	90	97
Burke	12	12	17	17	17	17	12	10	13	15	17	18	22	22	21
Cabarrus	27	27	23	20	20	10	14	21	8	11	11	12	15	16	27
Caldwell	15	13	15	14	12	9	12	12	12	13	15	15	17	17	17
Camden e															
Carteret	11	11	12	12	12	12	12	11	12	10	2	3	2	4	6
Caswell f															
Catawba	16	17	13	13	16	8	16	16	16	14	19	19	15	13	21
Chatham	8	9	9	4	3	2	3	2	0	1	3	6	4	6	7
Cherokee	10	10	10	9	8	5	8	8	8	7	12	11	11	10	14
Chester-Perquimans	9	7	8	6	7	6	7	5	4	2	5	5	3	5	7
Clay g															
Cleveland	20	22	23	19	22	21	20	21	22	21	25	23	27	28	30
Columbus	14	14	15	10	8	8	10	11	10	7	9	16	18	15	17
Craven	15	14	13	13	14	9	5	10	6	6	8	7	7	11	12
Cumberland	28	22	26	23	21	27	27	27	21	24	24	22	22	13	27
Currituck h	2	1	1	1	1										
Dare e															
Davidson	18	17	16	17	17	17	20	23	19	24	18	17	29	31	29
Davis i	5	5	5	5	6	4	2	1	1	1	4	2	4	10	12
Duplin	9	11	9	11	7	2	2	9	2	2					
Durham-Orange	63	65	67	76	77	76	76	85	87	81	104	110	119	127	128
Edgecombe-Nash	12	7	10	43	39	25	46	49	32	35	31	39	48	40	37
Forsyth	74	59	70	66	60	70	73	77	77	73	83	82	93	82	115
Franklin	12	11	10	9	7	7	9	8	9	9	6	3	3	3	4
Gaston	39	39	36	33	37	12	24	30	21	28	38	35	35	41	48
Gates	1	2	2	2	2	2	2	2	2	2	1	2	1	1	3
Grain															
Granville	14	13	13	13	12	10	10	11	10	11	13	13	14	14	14
Greene	5	5	5	5	5	5	6	5	6	6	7	6	5	6	7
Guilford	123	130	124	124	118	91	102	99	83	100	101	108	110	115	127
Halifax	17	17	16	15	14	13	15	18	17	23	23	23	24	21	26
Harnett	16	15	14	13	15	16	14	15	10	16	12	12	16	18	18
Haywood	8	14	12	13	15	20	19	21	22	21	22	21	21	19	21
Henderson	16	16	19	14	12	9	17	17	13	14	17	13	10	7	17
Henderson-Polk j															
Hertford	7	6	5	5	5	6	7	7	4	5	7	3	1	6	6
Hoke	12	14	14	14	12	11	13	14	13	11	10	7	10	10	11
Hyde	1	1	1	1	1										
Fredell-Alexander	37	30	38	38	39	29	34	38	39	30	31	25	27	24	23
Jackson	5	6	6	3	7	2	4	3	7	4	6	3	1	1	2
Johnston	23	18	23	25	20	12	19	21	12	9	27	23	24	18	18
Jones	3	3	3	3	3	3	3	3	3	2	1				
Lee	14	16	13	11	13	10	10	10	3	8	10	9	10	11	12
Lenoir	23	20	22	17	19	20	22	20	22	21	22	21	25	24	26
Lincoln	13	14	13	10	12	12	13	11	8	10	11	11	11	14	15
Macon-Clay	9	6	8	4	3	2	5	3	5	4	2	1	1	4	4
Madison	12	10	5	3	4										
Martin k	10	10	8	7	4										
Martin-Washington-Tyrrell															
McDowell	7	9	12	10	10	10	10	12	10	12	13	13	11	15	12

STATUS OF MEMBERSHIP BY COUNTIES—Continued

COUNTY	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Mecklenburg	119	125	128	124	117	104	108	116	116	125	119	119	130	138	127
Mitchell							3	2	3	3	2	3			
Mitchell-Avery						8									
Mitchell-Watauga	9	8	6	5	5										
Mitchell-Yancey															
Montgomery	10	11	9	10	9	9	9	9	8	7	3	6	4	5	6
Moore	20	22	17	21	21	18	22	21	19	22	21	20	19	17	22
Nash	30	30	33												
New Hanover	38	32	38	37	35	25	35	39	34	36	32	30	37	38	43
Northampton	9	6	3	4	5	4	8	4	4	4	9	1	3	7	4
Onslow	6	5	5	5	6	6	6	5	2	5	4	4	3	5	8
Orange m															
Pamlico	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3
Pasquotank-Camden-Currituck-Dare						12	14	12	11	9		9	11	10	14
Pasquotank-Camden-Dare h	16	14	17	14	11										
Pender	1	1	1	1	1	1	1	1		1	1				1
Perquimans n															
Person	7	6	6	6	6	7	7	8	7	7	8	8	9	8	8
Pitt	31	24	27	27	20	14	22	26	24	26	30	29	28	25	29
Polk	6	6	6	5	7	7	6	6	4	5	5	5	6	6	6
Randolph	11	10	8	7	14	10	11	13	10	9	11	11	13	12	12
Richmond	18	14	17	17	15	16	15	16	15	17	16	15	16	16	15
Robeson	28	21	24	21	22	23	25	27	28	29	34	33	35	35	35
Rockingham	21	20	24	24	21	22	23	21	18	20	18	22	22	26	24
Rowan-Davie	42	35	35	39	33	24	34	30	27	28	26	24	27	34	33
Rutherford	22	22	22	21	21	19	20	21	23	22	23	23	24	22	22
Sampson	13	10	13	13	14	14	14	14	14	16	16	16	18	18	16
Scotland	12	12	10	11	11	11	11	11	10	11	11	10	10	10	10
Stanly	14	14	16	15	13	12	16	17	18	19	18	20	16	17	20
Stokes	8	6	2	6	6	1	1	1							
Surry o	22	20	20	13	17	12									
Surry-Yadkin							25	22	17	15	14	12	18	16	19
Swain							3	3	4	5	3	3	2	7	3
Transylvania	7	4	2	2	1	3	2	2	2		2	3	1	7	8
Tyrrell p															
Union	16	14	13	10	9	10	10	11	10	8	11	13	13	14	15
Vance	11	11	12	8	7	8	9	9	8	8	6	10	10	10	12
Wake	80	84	94	87	86	87	89	88	89	95	100	95	94	93	87
Warren	6	6	6	6	6	5	5	6	2	2	2	2	3	2	3
Washington-Tyrrell k	6	5	3	3	3										
Watauga c q															
Watauga-Ashe						3	5	6	5	5	6	6	4	5	7
Wayne	38	38	38	30	32	22	27	29	27	29	30	31	34	33	35
Wilkes b	11	10	10	11	10										
Wilkes-Alleghany						9	13	10	14	13	14	15	13	16	17
Wilson	35	31	28	28	22	21	25	29	31	25	25	24	25	27	27
Yadkin n	3		10	4	4	1									
Yancey	5	3	4	1	1		5	4	1		4				
Totals	1,738	1,669	1,694	1,600	1,559	1,363	1,563	1,619	1,462	1,503	1,715	1,605	1,661	1,694	1,837

a See Iredell-Alexander; b See Wilkes-Alleghany; c See Watauga-Ashe; d See Mitchell-Avery; e See Pasquotank-Camden-Dare; f See Albemarle-Caswell; g See Macon-Clay; h See Pasquotank-Camden-Currituck-Dare; i See Rowan; j See Henderson or Polk; k See Martin; l See Washington-Tyrrell; m See Edgecomb-Nash for years after 1931; n See Durham-Orange; o See Chowan-Perquimans; p See Surry-Yadkin; q See Washington-Tyrrell; r See Mitchell-Watauga.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1942

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledoux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1884 to 1886

Name	Address	Appointed by	Term
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1888
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Tarboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1892 to 1897
Thomas F. Wood, M.D., Secretary†	Wilmington	State Society	1891 to 1895
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1893 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1894 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1897 to 1899
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1901 to 1907
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Soencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1907 to 1913
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1909
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D. ¹	Asheville	State Society	1909 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917

† Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

¹ Died leaving unexpired term.

Name	Address	Appointed by	Term
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1913 to 1919
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1915
A. A. Kent, M.D. ²	Lenoir	State Society	1913 to 1919
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1915 to 1921
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1917 to 1923
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D. ¹	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1919 to 1923
Fletcher R. Harris, M.D. ³	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1921 to 1923
Chas. E. Waddell, C.E. ⁴	Asheville	Gov. C. Morrison	1919 to 1925
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1923 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1929
J. Howell Way, M.D., President	Waynesville	Gov. C. Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. C. Morrison	1923 to 1927
James P. Stowe, Ph.G.	Charlotte	Gov. C. Morrison	1923 to 1925
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1929
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1926
Charles O'H. Laughinghouse, M.D. ⁵	Greenville	State Society	1925 to 1931
Cyrus Thompson, M.D. ¹	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D. ¹	Raleigh	Gov. A. W. McLean	1926 to 1931
Jno. B. Wright, M.D. ⁶	Raleigh	Gov. A. W. McLean	1925 to 1931
E. J. Tucker, D.D.S. ⁶	Roxboro	Gov. A. W. McLean	1926 to 1927
W. S. Rankin, M.D. ⁴	Charlotte	State Board of Health	1927 to 1929
L. E. McDaniel, M.D.	Jackson	State Board of Health	1927 to 1929
Chas. C. Orr, M.D.	Asheville	Gov. A. W. McLean	1929 to 1935
Thomas E. Anderson, M.D. ⁶	Statesville	State Society	1929 to 1935
L. E. McDaniel, M.D. ⁶	Jackson	State Society	1927 to 1933
James P. Stowe, Ph.G. ⁶	Charlotte	Gov. A. W. McLean	1929 to 1935
A. J. Crowell, M.D. ⁶	Charlotte	Gov. O. Max Gardner	1930 to 1931
J. M. Parrott, M.D. ⁶	Kinston	State Board of Health	1929 to 1935
Chas. C. Orr, M.D. ⁶	Asheville	Gov. O. Max Gardner	1931 to 1935
J. M. Parrott, M.D. ⁶	Kinston	State Society	1931 to 1935
C. V. Reynolds, M.D.	Asheville	State Society	1931 to 1933
L. B. Evans, M.D.	Windsor	State Society	1931 to 1933
S. D. Craig, M.D.	Winston-Salem	State Society	1931 to 1933
John T. Burrus, M.D.	High Point	Gov. O. Max Gardner	1931 to 1933
J. N. Johnson, D.D.S.	Goldsboro	Gov. O. Max Gardner	1931 to 1933
J. A. Goode, Ph.G.	Asheville	Gov. O. Max Gardner	1931 to 1933
H. L. Large, M.D.	Rocky Mount	Gov. O. Max Gardner	1931 to 1935
H. G. Baity, C.E.	Chapel Hill	Gov. O. Max Gardner	1931 to 1935
Grady G. Dixon, M.D. ⁷	Ayden	Ex. Com. State Society	1931 to 1932
Grady G. Dixon, M.D. ⁷	Ayden	State Society	1932 to 1935
S. D. Craig, M.D.	Winston-Salem	State Society	1933 to 1937
W. T. Rainey, M.D.	Fayetteville	State Society	1933 to 1937
J. N. Johnson, D.D.S.	Goldsboro	Gov. J. C. B. Ehringhaus	1933 to 1937
Hubert B. Haywood, M.D.	Raleigh	Gov. J. C. B. Ehringhaus	1933 to 1937
James P. Stowe, Ph.G.	Charlotte	Gov. J. C. B. Ehringhaus	1933 to 1937
Grady G. Dixon, M.D.	Ayden	State Society	1935 to 1939
J. LaBruce Ward, M.D.	Asheville	State Society	1935 to 1939
H. Lee Large, M.D.	Rocky Mount	Gov. J. C. B. Ehringhaus	1935 to 1939
H. G. Baity, C.E.	Chapel Hill	Gov. J. C. B. Ehringhaus	1935 to 1939
J. N. Johnson, D.D.S.	Goldsboro	Gov. Clyde R. Hoey	1937 to 1941
Hubert B. Haywood, M.D.	Raleigh	Gov. Clyde R. Hoey	1937 to 1941
James P. Stowe, Ph.G.	Charlotte	Gov. Clyde R. Hoey	1937 to 1941
S. D. Craig, M.D.	Winston-Salem	State Society	1937 to 1941
W. T. Rainey, M.D.	Fayetteville	State Society	1937 to 1941
Grady G. Dixon, M.D.	Ayden	State Society	1939 to 1943
J. LaBruce Ward, M.D.	Asheville	State Society	1939 to 1943
H. Lee Large, M.D.	Rocky Mount	Gov. Clyde R. Hoey	1939 to 1943
H. G. Baity, Sc.D.	Chapel Hill	Gov. Clyde R. Hoey	1939 to 1943
C. C. Fordham, Jr., Ph.G. ⁸	Greensboro	Gov. Clyde R. Hoey	1940 to 1943
S. D. Craig, M.D.	Winston-Salem	State Society	1941 to 1945
W. T. Rainey, M.D.	Fayetteville	State Society	1941 to 1945

² Resigned to become member of General Assembly.³ Resigned to become Health Officer Vance County.⁴ Resigned.⁵ Resigned to become Secretary of State Board of Health.⁶ Term terminated on account of the reorganization of the

State Board of Health by General Assembly.

⁷ To fill vacancy caused by resignation of Dr. J. M.

Parrott.

⁸ To fill vacancy caused by the death of James P. Stowe, Ph.G.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

James H. Dickson, Wilmington.....	1859-1866
Charles E. Johnson, Raleigh.....	1859-1866
Caleb Winslow, Hertford.....	1859-1866
Otis F. Manson, Townsville.....	1859-1866
William H. McKee, Raleigh.....	1859-1866
Christopher Happoldt, Morganton.....	1859-1866
J. Graham Tull, New Bern.....	1859-1866
Samuel T. Iredell, Secretary.....	1859-1866

SECOND BOARD

N. J. Pittman, Tarboro.....	1866-1872
E. Burke Haywood, Raleigh.....	1866-1872
R. H. Winborne, Edenton.....	1866-1872
S. S. Satchwell, Rocky Point.....	1866-1872
J. J. Summerell, Salisbury.....	1866-1872
R. B. Haywood, Raleigh.....	1866-1872
M. Whitehead, Salisbury.....	1866-1872
J. F. Shaffner, Salem.....	1866-1872
William Little, Secretary.....	1866-1872
Thomas F. Wood, Secretary, Wilmington.....	1867-1872

THIRD BOARD

Charles J. O'Hagan, Greenville.....	1872-1878
W. A. B. Norcom, Edenton.....	1872-1878
C. Tate Murphy, Clinton.....	1872-1878
George A. Foote, Warrenton.....	1872-1878
J. W. Jones, Tarboro.....	1872-1878
R. L. Payne, Lexington.....	1872-1878
Charles Duffy, Jr., Secretary, New Bern.....	1872-1878

FOURTH BOARD

Peter E. Hines, Raleigh.....	1878-1884
Thomas D. Haigh, Fayetteville.....	1878-1884
George L. Kirby, Goldsboro.....	1878-1884
Thomas F. Wood, Wilmington.....	1878-1884
Joseph Graham, Charlotte.....	1878-1884
Robert I. Hicks, Williamston ¹	1878-1880
Richard H. Lewis, Raleigh ²	1880-1884
Henry T. Bahnson, Secretary, Salem.....	1878-1884

FIFTH BOARD

William R. Wood, Scotland Neck.....	1884-1890
Augustus W. Knox, Raleigh.....	1884-1890
Francis Duffy, New Bern.....	1884-1890
Patrick L. Murphy, Morganton.....	1884-1890
Willis Alston, Littleton.....	1884-1890
J. A. Reagan, Weaverville.....	1884-1890
W. J. H. Bellamy, Secretary, Wilmington.....	1884-1890

SIXTH AND SEVENTH BOARDS³

R. L. Payne, Jr., Lexington.....	1890-1892
George W. Purefoy, Asheville.....	1890-1892
George G. Thomas, Wilmington.....	1890-1894
Robert S. Young, Concord.....	1890-1894

William H. Whitehead, Rocky Mount.....	1890-1896
George W. Long, Graham.....	1890-1896
L. J. Picot, Secretary, Littleton.....	1890-1896
Julian M. Baker, Tarboro.....	1892-1898
H. B. Weaver, Secretary, Asheville.....	1892-1898
J. M. Hays, Greensboro ⁴	1894-1897
Kemp P. Battle, Jr., Raleigh ⁵	1897-1900
Thomas S. Burbank, Wilmington ¹	1894-1898
Richard H. Whitehead, Chapel Hill ⁴	1896-1898
William H. H. Cobb, Goldsboro ⁶	1898-1900
J. Howell Way, Secretary, Waynesville ⁷	1898-1902
David T. Tayloe, Washington.....	1896-1902
Thomas E. Anderson, Sec., Statesville.....	1896-1902
Albert Anderson, Wilson ⁸	1898-1902
Edward C. Register, Charlotte ⁸	1898-1902
Thomas S. McMullan, Hertford ⁸	1900-1902
John C. Walton ⁸	1900-1902

EIGHTH BOARD

A. A. Kent, Lenoir.....	1902-1908
Charles O'H. Laughinghouse, Greenville.....	1902-1908
M. H. Fletcher, Asheville.....	1902-1908
James M. Parrott, Kinston.....	1902-1908
J. T. J. Battle, Greensboro.....	1902-1908
Frank H. Russell, Wilmington.....	1902-1908
George W. Pressly, Secretary, Charlotte ¹	1902-1906
G. T. Sikes, Secretary, Grissom ⁹	1906-1908

NINTH BOARD

Lewis B. McBrayer, Asheville.....	1908-1914
John C. Rodman, Washington.....	1908-1914
William W. McKenzie, Salisbury.....	1908-1914
Henry H. Dodson, Greensboro.....	1908-1914
John Bynum, Winston-Salem.....	1908-1914
J. L. Nicholson, Richlands.....	1908-1914
Benj. K. Hays, Secretary, Oxford.....	1908-1914

TENTH BOARD

Isaac M. Taylor, Morganton.....	1914-1920
John Q. Myers, Charlotte.....	1914-1920
Jacob F. Highsmith, Fayetteville.....	1914-1920
Martin L. Stevens, Asheville.....	1914-1920
Charles T. Harper, Wilmington ⁴	1914-1915
Edwin G. Moore, Elm City ¹⁰	1915-1920
John G. Blount, Washington ¹¹	1914-1920
Hubert A. Royster, Secretary, Raleigh.....	1914-1920

ELEVENTH BOARD

Lester A. Crowell, Lincolnton.....	1920-1926
William P. Holt, Duke.....	1920-1926
J. Gerald Murphy, Wilmington.....	1920-1926
Lucius N. Glenn, Gastonia.....	1920-1926
Clarence A. Shore, Raleigh.....	1920-1926
William M. Jones, Greensboro.....	1920-1926
Kemp P. B. Bonner, Sec., Morehead City.....	1920-1926

TWELFTH BOARD

Paul H. Ringer, Asheville.....	1926-1932
W. Houston Moore, Wilmington.....	1926-1932
T. W. M. Long, Roanoke Rapids.....	1926-1932
W. W. Dawson, Grifton ⁴	1926-1930
J. K. Pepper, Winston-Salem.....	1926-1932
Foy Roberson, Durham.....	1926-1932
John W. McConnell, Secretary, Davidson.....	1926-1932
David T. Tayloe, Jr., Washington ¹²	1930-1932

¹ Resigned before expiration of term.

² Elected for unexpired term of Dr. Hicks.

³ In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

⁴ Died before the expiration of his term.

⁵ Elected to serve unexpired term of Dr. Hays.

⁶ Elected to serve the unexpired term of Dr. Burbank.

⁷ Elected to serve the unexpired term of Dr. Whitehead.

⁸ Elected for short term expiring in 1902.

⁹ Elected to serve the unexpired term of Dr. Pressly.

¹⁰ Elected to serve the unexpired term of Dr. Harper.

¹¹ Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

¹² Elected to serve unexpired term of Dr. W. W. Dawson.

THIRTEENTH BOARD

Ben F. Royal, Morehead City.....	1932-1938
Benj. J. Lawrence, Secretary, Raleigh.....	1932-1938
F. Webb Griffith, Asheville.....	1932-1938
Hamilton W. McKay, Charlotte.....	1932-1938
J. W. Vernon, Morganton.....	1932-1938
W. H. Smith, Goldsboro.....	1932-1938
K. G. Averitt, Cedar Creek ¹	1932-1938
Roscoe D. McMillan, Red Springs ¹³	1936-1938

FOURTEENTH BOARD

Karl B. Pace, Greenville.....	1938-1944
William M. Coppridge, Durham.....	1938-1944
Frank A. Sharpe, Greensboro.....	1938-1944
Lewis W. Elias, Asheville.....	1938-1944
J. Street Brewer, Roseboro.....	1938-1944
W. D. James, Secretary, Hamlet.....	1938-1944
L. A. Crowell, Jr., Lincolnton.....	1938-1944

¹³ Elected to serve unexpired term of Dr. Averitt.

MOORE COUNTY MEDICAL SOCIETY MEDAL

In 1927 the Moore County Medical Society kindly put up enough money, the interest from which would pay for a medal to be given for the best paper read before the meeting each year. No one is eligible to receive this medal except Fellows of the Medical Society of the State of North Carolina in good standing; no invited guest is allowed to compete.

Each Section Chairman selects a committee of three to pass on the best paper written in their section. These six papers are then turned over to the State Committee who pass on the best of the six papers, the winner in this instance to receive the medal. The following Fellows have been awarded this medal:

- 1928—Paul Pressly McCain, M.D.....Sanatorium
"The Diagnosis and Significance of Juvenile Tuberculosis"
(From Section on Pediatrics)
- 1929—A. B. Holmes, M.D.....Fairmont
"The Treatment of Uremia"
(From Section on Chemistry, Materia Medica and Therapeutics)
- 1930—C. T. Smith, M.D., and W. Bernard Kinlaw, M.D.....Rocky Mount
"The Clinical Consideration of Anaemia of Pregnancy and of Puerperium"
(From Section on Practice of Medicine)
- 1931—F. C. Smith, M.D.....Charlotte
"Practical Value of Perimetry in Intracranial Conditions; Case Reports" (tumors, vascular disease, toxemia, syphilis and trauma)
(From Section on Eye, Ear, Nose and Throat)
- 1932—Charles I. Allen, M.D.....Wadesboro
"An Improved Splint for Treating Fractures of the Lower Extremity Showing Reduction and Skeletal Distraction Attachments"
(From Section on Surgery)
- 1933—H. F. Sloan, M.D.....Charlotte
"Some General Remarks about Cataract Surgery, With Report of 100 Consecutive Uncomplicated Cataract Operations"
(From Section on Ophthalmology and Otolaryngology)
- J. R. Adams, M.D.....Charlotte
"Hypo-glycaemia in Children"
(From Section on Pediatrics)

- 1934—Fred E. Motley, M.D.....Charlotte
"Complications of Mastoiditis with Special Reference to Septicemia"
(From Section on Ophthalmology and Otolaryngology)
- 1935—Arthur H. London, M.D.....Durham
"The Composition of an Average Pediatrics Practice"
(From Section on Pediatrics)
- 1936—V. K. Hart, M.D.....Charlotte
"Etiological and Therapeutic Aspects of Bronchiectasis with Clinical Observations on Bronchial Lavage by the Stitt Method"
(From Section on Ophthalmology and Otolaryngology)
- 1937—No award made.
- 1938—O. Hunter Jones, M.D.....Charlotte
"Pelvic Architecture and Classification with its Practical Application"
(From Section on Gynecology and Obstetrics)
- 1939—Donnell B. Cobb, M.D.....Goldsboro
"Vaginal Ureterolithotomy"
(From Section on Surgery)
- 1940—C. R. Monroe, M.D., C. D. Thomas, M.D., and C. L. Gray, M.D.....Pinehurst
"Thoracoplasty and Apicolysis"
(From Section on Surgery)
- 1941—Walter R. Johnson, M.D.....Asheville
"Is Diverticulitis of the Colon a Surgical Disease?"
(From Section on Practice of Medicine)

OFFICERS

OFFICERS 1941-1942

- President—F. Webb Griffith, M.D.....Asheville
President-Elect—Donnell B. Cobb, M.D.....Goldsboro
First Vice Pres.—T. DeL. Sparrow, M.D.....Charlotte
Second Vice Pres.—T. L. Carter, M.D.....Gatesville
Sec.-Treas.—Roscoe D. McMillan, M.D., Red Springs

OFFICERS 1942-1943

- President—Donnell B. Cobb, M.D.....Goldsboro
President-Elect—James W. Vernon, M.D., Morganton
First Vice Pres.—George S. Coleman, M.D., Raleigh
Second Vice Pres.—Julian Moore, M.D.....Asheville
Sec.-Treas.—Roscoe D. McMillan, M.D., Red Springs

COUNCILORS 1940-1943

- First District—H. D. Walker, M.D.....Elizabeth City
Second District—Thomas Leslie Lee, M.D., Kinston
Third District—W. Houston Moore, M.D., Wilmington
Fourth District—G. W. Mitchell, M.D.....Wilson
Fifth District—J. G. Pate, M.D.....Gibson
Sixth District—George L. Carrington, M.D., Burlington
Seventh District—Robert H. Crawford, M.D., Ruthersfordton
Eighth District—M. D. Bonner, M.D.*.....Jamestown
Ninth District—I. E. Shafer, M.D.....Salisbury
Tenth District—Harold S. Clark, M.D.....Asheville

SECTION CHAIRMEN 1942-1943

- General Practice of Medicine and Surgery—Fred Falls, M.D., Lawndale
Gynecology and Obstetrics—Paul W. Johnson, M.D., Winston-Salem
Ophthalmology and Otolaryngology—W. Banks Anderson, M.D., Durham
Pediatrics—J. R. Ashe, M.D.....Charlotte
Practice of Medicine—E. J. Wannamaker, Jr., M.D., Charlotte
Public Health and Education—E. H. Hand, M.D., Charlotte
Surgery—J. F. Robertson, M.D.....Wilmington

* Appointed to fill the unexpired term of Dr. James H. McNeill, who has been called into service.

DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

W. T. Rainey, M.D. (1942-1943)	Fayetteville
Ross S. McElwee, M.D. (1943-1944)	Statesville
W. C. Davison, M.D. (1942-1944)	Durham
C. C. Carpenter, M.D., Alternate	Winston-Salem
I. H. Manning, M.D., Alternate	Chapel Hill
C. W. Armstrong, M.D., Alternate	Salisbury

DELEGATES TO THE MEDICAL SOCIETY OF VIRGINIA, 1942 MEETING

Newsom P. Battle, M.D.	Rocky Mount
S. M. Bittinger, M.D.	Black Mountain
B. E. Rhudy, M.D.	Greensboro
John C. Tayloe, M.D.	Washington

DELEGATES TO SOUTH CAROLINA MEDICAL ASSOCIATION, 1943 MEETING

W. D. James, Sr., M.D.	Hamlet
T. D. Sparrow, M.D.	Charlotte
D. M. McIntosh, M.D.	Old Fort

COMMITTEES

Mental Hygiene

William Allan, M.D.	Charlotte
W. T. Parrott, M.D.	Kinston
E. H. E. Taylor, M.D.	Morganton

Moore County Medical Society Medal

Addison G. Brenizer, M.D., Chairman	Charlotte
Russell O. Lyday, M.D.	Greensboro
C. T. Smith, M.D.	Rocky Mount

Obituaries

C. A. Woodard, M.D., Chairman	Wilson
S. A. Saunders, M.D.	Aulander
Forrest M. Houser, M.D.	Cherryville

Postgraduate Medical Study

W. H. Smith, M.D., Chairman	Goldsboro
R. F. Leinbach, M.D.	Charlotte
W. Reece Berryhill, M.D.	Chapel Hill
W. C. Davison, M.D.	Durham
C. C. Carpenter, M.D.	Winston-Salem
G. M. Cooper, M.D.	Raleigh

Printing

Roscoe D. McMillan, M.D., Chairman	Red Springs
Wingate M. Johnson, M.D.	Winston-Salem
R. B. McKnight, M.D.	Charlotte

Public Relations

Roscoe D. McMillan, M.D., Chairman	Red Springs
C. F. Strosnider, M.D.	Goldsboro
H. D. Walker, M.D.	Elizabeth City

Social Security

George L. Carrington, M.D., Chairman	Burlington
W. C. Bostic, M.D.	Forest City
Ben J. Lawrence, M.D.	Raleigh
K. B. Pace, M.D.	Greenville
Thomas L. Carter, M.D.	Gatesville
H. F. Glenn, Jr., M.D.	Gastonia
B. W. McKenzie, M.D.	Salisbury
John Kennedy, M.D.	Charlotte
V. L. Bigler, M.D.	Albemarle
Hunter Sweeney, M.D.	Durham
C. A. Peterson, M.D.	Spruce Pine
F. M. Patterson, M.D.	Greensboro

Specialized Medicine

F. Webb Griffith, M.D., Chairman	Asheville
Ben Royal, M.D.	Morehead City
B. O. Edwards, M.D.	Asheville
Hamilton W. McKay, M.D.	Charlotte
W. H. Smith, M.D.	Goldsboro
I. H. Manning, M.D.	Chapel Hill

Syphilis Control

J. C. Knox, M.D., Chairman	Raleigh
Raymond Thompson, M.D.	Charlotte
J. Roy Hege, M.D.	Winston-Salem

Advisory to Industrial Commission

N. P. Battle, M.D., Chairman	Rocky Mount
Foy Roberson, M.D.	Durham
O. L. Miller, M.D.	Charlotte

Advisory Committee on Maternity and Infancy for the Children's Bureau

Aldert S. Root, M.D., Chairman	Raleigh
J. Buren Sidbury, M.D.	Wilmington
Arthur London, M.D.	Durham

Advisory to Woman's Auxiliary

P. P. McCain, M.D., Chairman	Sanatorium
Rachel Davis, M.D.	Kinston
Houston Moore, M.D.	Wilmington
Sidney Smith, M.D.	Raleigh

Cancer

H. B. Ivey, M.D., Chairman	Goldsboro
C. C. Carpenter, M.D.	Winston-Salem
Thomas Leslie Lee, M.D.	Kinston

Commercializing Drugs

James M. Northington, M.D., Chairman	Charlotte
W. I. Wooten, M.D.	Greenville
W. T. Rainey, M.D.	Fayetteville

Finance

Vance P. Peery, M.D., Chairman	Kinston
W. H. Sprunt, M.D.	Winston-Salem
W. M. Coppridge, M.D.	Durham

Hospitals

J. B. Whittington, M.D., Chairman	Winston-Salem
B. C. Willis, M.D.	Rocky Mount
James Davis, M.D.	Statesville

Industrial Health

H. F. Eason, M.D., Chairman	Sanatorium
I. T. Mann, M.D.	High Point
D. W. Holt, M.D.	Greensboro
Charles H. Cocke, M.D.	Asheville

Legislation

Hubert B. Haywood, M.D., Chairman	Raleigh
Ross S. McElwee, M.D.	Statesville
P. F. Whitaker, M.D.	Kinston

Medical Society Foundation

L. C. Skinner, M.D. (1939-1943)	Charlotte
Ross S. McElwee, M.D. (1940-1944)	Statesville
John Q. Myers, M.D. (1941-1945)	Charlotte
J. A. Shaw, M.D. (1942-1946)	Fayetteville

Tuberculosis

S. M. Bittinger, M.D., Chairman	Black Mountain
P. A. Yoder, M.D.	Winston-Salem
Paul Ringer, M.D.	Asheville

Committee on Scientific Work

Deryl Hart, M.D., Chairman	Durham
E. McG. Hedgpeth, M.D.	Chapel Hill
Tinsley Harrison, M.D.	Winston-Salem

Medical Preparedness

Hubert B. Haywood, M.D., Chairman	Raleigh
F. Webb Griffith, M.D.	Asheville
Carl V. Reynolds, M.D.	Raleigh

Insurance Committee

Hamilton W. McKay, M.D., Chairman	Charlotte
Paul P. McCain, M.D.	Sanatorium
Julian Moore, M.D.	Asheville

Committee for Collecting Old Surgical Instruments

Ross S. McElwee, M.D., Chairman	Statesville
C. F. Strosnider, M.D.	Goldsboro
J. W. Vernon, M.D.	Morganton

Committee to Study Industrial Fees

Joseph A. Elliott, M.D., Chairman.....	Charlotte
W. D. James, Sr., M.D.....	Hamlet
Harry Brockmann, M.D.....	High Point
James F. Robertson, M.D.....	Wilmington
C. F. Strosnider, M.D.....	Goldsboro

Committee to Revise the Constitution and By-Laws

H. A. Royster, M.D., Chairman.....	Raleigh
James W. Vernon, M.D.....	Morganton
F. Webb Griffith, M.D.....	Asheville
George W. Mitchell, M.D.....	Wilson
Roscoe D. McMillan, M.D.....	Red Springs

Board of Medical Examiners of the State of North Carolina, 1938-1944

President—William M. Coppridge, M.D.....	Durham
Secretary-Treas.—W. D. James, Sr., M.D.....	Hamlet
Karl B. Pace, M.D.....	Greenville
Frank A. Sharpe, M.D.....	Greensboro
Lewis W. Elias, M.D.....	Asheville
J. Street Brewer, M.D.....	Roseboro
L. A. Crowell, Jr., M.D.....	Lincolnton

North Carolina Board of Nurse Examiners

President—Miss Josephine Kerr, R.N. (Nurses Association) 1942	Charlotte
Secretary-Treasurer and Educational Director—Miss Bessie Chapman, R.N. (Nurses Association) 1943	Raleigh
Miss Ruth Pannill, R.N. (Nurses Association) 1944	Winston-Salem
Moir S. Martin, M.D. (From Hospital Association) 1940-1943	Mount Airy
Thomas C. Johnson, M.D. (From Medical Society) 1940-1943	Lumberton

Arrangements

Roscoe D. McMillan, M.D., Chairman.....	Red Springs
Place of Meeting | To be determined by the Execu-	
Time of Meeting | tive Committee	

SESSIONS OF THE HOUSE OF DELEGATES

MONDAY AFTERNOON SESSION
May 11, 1942

The House of Delegates of the Medical Society of the State of North Carolina convened for its Eighty-Ninth Annual Session in the ballroom of the Charlotte Hotel, Charlotte, on Monday afternoon, May 11, 1942, with the President, Dr. F. Webb Griffith, of Asheville, presiding.

President Griffith: The meeting will please come to order.

I ask Dr. McCain to offer an invocation.

... Dr. McCain then gave the invocation.

President Griffith. We are now ready for the roll call of delegates.

... The Secretary-Treasurer of the Society, Dr. Roscoe D. McMillan, called the roll, and the following delegates were present:

<i>County</i>	<i>Delegates</i>
Alamance-Caswell.....	S. C. Spoon
Anson.....	
Avery.....	
Beaufort.....	John Cotton Tayloe
Bertie.....	
Bladen.....	
Brunswick.....	
Buncombe.....	Julian A. Moore
Burke.....	
Cabarrus.....	
Caldwell.....	C. R. Hedrick
Carteret.....	K. P. B. Bonner
Catawba.....	K. L. Cloninger
Cherokee.....	
Cleveland.....	H. C. Thompson
Columbus.....	
Craven.....	R. S. McGeachy
Cumberland.....	J. Alex Shaw
Davidson.....	J. R. Terry
Duplin.....	
Durham-Orange.....	W. C. Davison,
A. H. London, W. M. Coppridge.	
Edgecombe-Nash.....	Newsom P. Battle
Forsyth.....	J. F. Marshall, J. K. Pepper
Franklin.....	
Gaston.....	C. R. McAdams
Gates.....	
Graham.....	
Granville.....	
Greene.....	
Guilford.....	B. E. Rhudy,
C. T. Whittington, M. D. Bonner.	

<i>County</i>	<i>Delegates</i>
Halifax.....	
Harnett.....	L. R. Doffermyre
Haywood.....	
Henderson.....	J. Steven Brown
Hertford.....	
Hoke.....	
Hyde.....	
Iredell-Alexander.....	G. W. Taylor
Jackson.....	
Johnston.....	Watson Wharton
Jones.....	
Lee.....	
Lenoir.....	Rachel D. Davis
Lincoln.....	W. G. Bandy
Macon-Clay.....	
Madison.....	
Martin-Washington-Tyrrell.....	
McDowell.....	J. F. Jonas
Mecklenburg.....	T. D. Sparrow,
J. A. Elliott, R. T. Ferguson, Andrew D. Taylor,	
John Q. Myers.	
Mitchell-Yancey.....	C. A. Peterson
Montgomery.....	
Moore.....	F. L. Owen
New Hanover.....	J. F. Robertson
Northampton.....	
Onslow.....	
Pamlico.....	
Pasquotank-Camden-Currituck-Dare.....	H. D. Walker
Pender.....	
Person.....	
Pitt.....	J. L. Winstead
Polk.....	M. C. Palmer
Randolph.....	
Richmond.....	W. D. James
Robeson.....	L. R. Hedgpeth
Rockingham.....	Carl V. Tyner
Rowan-Davie.....	J. W. Frazier
Rutherford.....	W. C. Bostic, Jr.
Sampson.....	A. N. Johnson
Scotland.....	M. B. Wilkes
Stanly.....	B. T. Talley
Surry-Yadkin.....	
Swain.....	
Transylvania.....	
Union.....	J. J. Goudelock
Vance.....	
Wake.....	G. S. Coleman,
J. J. Combs, M. D. Hill, T. L. Umphlet, V. S.	
Caviness.	
Warren.....	

County	Delegates
Watauga-Ashe.....	Wm. H. Smith
Wayne.....	J. H. McNeill
Wilkes-Alleghany.....	M. A. Pittman
Wilson.....	

Secretary-Treasurer McMillan: Mr. President, there is a quorum present.

President Griffith: Dr. Sparrow, will you take the chair?

Vice-President Sparrow: Members of the House of Delegates, it is our pleasure at this time to have the message from our President, Dr. F. Webb Griffith, of Asheville.

President Griffith:

President's Message to the House of Delegates

The Presidency of the North Carolina Medical Society is an honor of which any one should be proud. The fact that you elected me after my retirement makes me all the more appreciative. It is the culmination of my life work. Although I am no longer in active practice, I shall continue to serve in the ranks of organized medicine to the best of my ability.

When we met last, war was a threat; now it is a certainty. Our professional and personal lives will be changed greatly, but as a Society probably we shall carry on in the usual manner.

I wish to report briefly on the activities of the past year. First let me express my appreciation of the devoted and efficient service of our new secretary, Dr. Roscoe McMillan. He has given unstintingly of his time, placing the duties of Secretary above his private practice. Together we have visited all of the ten District Societies, and separately we have made a second visit to some. We were impressed with the sincerity and enthusiasm of the doctors throughout the state. The papers were excellent. The District Societies have an important place in our organization and should be encouraged.

There was only one meeting of the Executive Committee within the year, and that was on the memorable December 7. A report of that meeting will be given you later.

Dr. Harold Clark, Councilor for the Tenth District, and I met with the physicians of Yancey County and plans were made for the organization of a county society. It was in reality the rejuvenation of the society, which had become moribund.

There seems to be complete harmony among the doctors of the state. The various committees have functioned well, and to them I extend my thanks for their cooperation.

When I took over the Presidency, Dr. Hubert Haywood, the retiring President, became chairman of the Committee on Medical Preparedness. To him also has been assigned the State Chairmanship of the Committee on Procurement and Assignment. As in everything he undertakes, Dr. Haywood is rendering excellent service in this dual capacity.

It was my privilege to meet with the committee on Socialized Medicine, which is headed by one of our most able members, Dr. Hamilton McKay. This committee has been giving serious consideration to the difficult problems with which they have to deal. One of their grave concerns is the precarious position of our three insurance association, Hospital Saving, Hospital Care, and Medical Service. Legislation is pending in Washington which, if enacted, would practically destroy the excellent pioneer work of these organizations. In addition are the inroads made by the commercial insurance companies, and for that we are not entirely blameless. Hitler's policy is to divide and conquer. The commercial insurance companies have only to conquer, for our three companies remain divided and vulnerable.

The duties of the Secretary of the Medical Society of the State of North Carolina have become so numerous and exacting that the time is not far distant when they will require practically his full time. Might we not consider the wisdom of consolidating the offices of the Secretary of the State Society and Secretary of the Board of Medical Examiners under one full-time man with an adequate salary? He could be an Executive Secretary without the privilege of voting.

Many of our members are going into the service. We wish them well, but a tangible evidence of our appreciation would be remission of their dues while they are in the service. Furthermore, I recommend that we go on record as urging that those physicians who remain at home do all in their power to safeguard the interests of their absent colleagues and to aid them in getting reestablished upon their return.

There are numerous errors and conflicting statements in our Constitution and By-Laws. I recommend that the incoming President appoint a committee to revise and correct them and to report at our next annual meeting.

At the request of the Secretary I recommend that his books be audited April 15, instead of in December, so that his report at the annual meeting will be up to date.

Within the past year the United States Department of Agriculture has selected a number of counties throughout the country in which to establish Group Medical Plans for farmers. Alamance county was one of those selected. The two groups which would be involved were the farmers and doctors. The farmers were asked if they would like such an arrangement, and considerable pressure was used by an agent of the Government to persuade them to consent. The doctors were, in effect, not asked but told what they were expected to do. It was an insidious attempt to obtain an entering wedge for socialized medicine. Through the efforts of the local physicians and of Senator Bailey, who personally urged Secretary Wickard against such an experiment at this crucial time, apparently the scheme has been abandoned. I wish to thank Senator Bailey publicly, as I have done privately, for his prompt and active cooperation in our behalf. This is not the first time that Senator Bailey has shown that he is our friend.

Many physicians who, because of age or disability, cannot enter the service will be transferred to other localities to fill an urgent need caused by the absence of those who have enlisted. In order to obtain the best results, the Procurement and Assignment Committee should have the power to place these doctors wherever they are most needed, regardless of state barriers. I recommend that the Board of Medical Examiners find some way to give these doctors license to practice during their temporary residence.

For several years the influx of immigrant physicians has been an increasing menace to the high standards of our profession. Very soon, however, there will be an acute shortage of doctors. I hope the Board of Examiners can find some means of utilizing the services of these so-called immigrant or refugee physicians. Possibly they could be placed in hospitals, where a license is not required; and later, to those who prove worthy, licenses might be granted. Having served on the Board of Medical Examiners, I am fully aware of the constant vigilance necessary to maintain our high standards of medical practice. But we are in a critical period, and we may have to waive temporarily some of our regulations in the fight for ultimate victory.

Recently the Chairman of the State Industrial Commission came to my home and requested that

he have the privilege of confirming the name of the doctor to be appointed on our Advisory Committee to succeed Dr. Pittman. This request, he said, was made in the interest of harmony. I assured him that harmony and cooperation are badly needed between the Industrial Commission and the medical profession, and said that I would gladly recommend the extension of that courtesy to the Commission if it would extend the same privilege of confirmation to the President of the Medical Society before making an appointment to the position of Medical Director, which is now held by Dr. Horton. To this the Commission Chairman refused to agree. In effect, the Commissioners feel that they are better qualified than is the President of the Society to decide the qualifications of a member of the Advisory Committee, but they not only do not desire the opinion of the President but absolutely refuse to permit him to have any voice in the selection of the Medical Advisor. The self-appraisal by the Commissioners of their ability to judge the qualifications of a doctor is so much higher than their appraisal of the judgment of the President of the State Society that there is very little chance for a harmonious agreement. I recommend that these facts be presented to the Governor. I think we should explain to the Governor that we are willing and anxious to grant the request of the Commission in the interest of harmony, providing the courtesy is reciprocated, but that the Chairman of the Commission positively refuses such reciprocation. I further recommend that we respectfully request the Governor to make whatever changes he deems necessary to correct this intolerable situation.

President Griffith (continuing): Mr. Chairman, we have with us as our guest at this meeting a distinguished surgeon of international reputation, a man who has been honored with the highest honor which can be given by the American Medical Association, its presidency. I recommend that Dr. Fred W. Rankin, of Lexington, Ky., be made an honorary member of the Medical Society of the State of North Carolina.

I thank you.

Secretary-Treasurer McMillan: Mr. Chairman, I move that you appoint a committee of three to study the recommendations which the President has just made and to study the address he is to make tomorrow morning before the first general session, such committee to report at the next meeting of the House of Delegates.

... The motion was duly seconded and when voted upon was carried.

Vice-President Sparrow: I appoint on that committee Dr. P. P. McCain as chairman, Dr. H. B. Ivey, and Dr. C. R. Hedrick.

Now, Mr. President, I turn the meeting back to you.

... President Griffith then resumed the chair.

President Griffith: We will now have the report of the Secretary-Treasurer.

Secretary-Treasurer McMillan:

Report of the Secretary-Treasurer

To the members of the House of Delegates of the Medical Society of the State of North Carolina, the following Annual Report of the Secretary-Treasurer is respectfully submitted:

This session of the House of Delegates marks the end of my first year as Secretary-Treasurer of the Medical Society of the State of North Carolina. I shall digress for a moment to express my appreciation to the members of this House, to all the officers of the Society, and to the officers and members of all County Medical Societies for the kind

consideration, assistance and encouragement extended me throughout the year. You have given me a year of intensive interest, immeasurable profit and a hitherto unthought-of opportunity for my personal education. Sections of our grand old state that only a short time ago appeared hazy have now become clear and definite. I have, of course, visited from one end of the state to the other. You, gentlemen, gave me this opportunity and, furthermore, you gave me the privilege of coming in intimate contact with the members of the medical profession of North Carolina. I have seen them, lived with them, and talked with them individually and collectively and I have been impressed by their leadership, not only as physicians, but as citizens, in their respective communities.

As will be shown in official reports to be submitted later to the House of Delegates, the Medical Society of the State of North Carolina has attempted to discharge fully its duty not only to North Carolina but to the Nation and to Medicine during the emergency created by the present World War.

The official membership, as of December 31, 1941, includes the names of 318 honorary fellows and 1478 active fellows, making a total membership of 1796. This means, of course, that the year 1941 closed with the largest membership in the history of the Society.

As of May 10, 1942, we have 348 honorary fellows and 1260 active fellows, making a total of 1608 members, compared with 310 honorary fellows and 1331 active fellows, a total of 1641 members on May 15, 1941. This is a decrease of only 33 members in 1942, in spite of the fact that so many physicians are in military service.

During the year the deaths of 33 fellows were reported to the Secretary's office.

On December 31, 1941, a complete audit was made of the receipts and disbursements of the Society. This audit is attached to my report, and will appear with the Transactions in the August issue of the *North Carolina Medical Journal*. I shall take time here only to give the totals which I believe will be of interest to you.

The budget estimate of receipts for 1941 was \$16,550.00; actually \$16,980.53 was collected. The budget estimate of expenditures was \$16,415.00, whereas \$14,873.48 was actually spent. Thus the actual excess of receipts over expenditures for 1941 was \$1,707.05. The cash balance on hand December 31, 1941, was \$16,506.47, of which sum \$1,000.00 was represented by a certificate of deposit in the Scottish Bank of Red Springs, N. C.; \$5,125.77 was on savings in the Bank of Halifax, Weldon, N. C., and an investment of \$5,032.00 was in United States Defense Bonds, leaving a checking account of \$5,348.70.

In January, 1942, the \$5,125.77 was transferred from the Bank of Halifax to Red Springs and used for the purchase of Defense Bonds in the amount of \$5,032.00, and \$1,500.00 was transferred from the checking account to the savings account in the Scottish Bank of Red Springs. In April, 1942, \$1,000.00 was added to our savings account in the Scottish Bank. Thus we have a total of \$10,064.00 in Defense Bonds and \$3,500.00 on savings. The balance in our checking account as of May 1, 1942, is \$9,620.12.

A large number of communications have been received from physicians who have been called into active duty with the military forces of the nation pertaining to the suspension of payment of fellowship dues. It appears that a number of county medical societies, by the adoption of resolutions, or under authorization provided in their by-laws, have suspended in whole or in part the payment of mem-

bership fees by members who have been assigned to active duty. As there is no provision whatever in the Constitution and By-Laws of the Medical Society of the State of North Carolina for the suspension of dues, the secretary has been compelled, in replying to communications of this nature, to state that no such authorization exists.

Since I am confident that some discussion regarding this item will follow, I shall give you some figures which should guide you in passing upon this measure.

The Procurement and Assignment Service has been decentralized to the various states. A board is now set up at Fort Bragg for the procurement of North Carolina doctors for the army. These are

the figures given to me on May 2, and you will hear a great deal more on this subject tomorrow morning.

The plan is to recruit 300 physicians in North Carolina by June 30, 1942. The need is very acute and the shortage in the army at present is approximately 5,000. North Carolina's quota is 1,300. The need is for physicians under 37 years of age, and in no case over 45. About 12 per cent of the active doctors in North Carolina will be affected by this drive for 300 physicians. The Board has set up an office at Fort Bragg, which is open seven days a week. Physicians are invited to go to Fort Bragg, sign applications, get physical examinations and be

AUDITOR'S REPORT ON THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA Exhibit "A"

CASH RECEIPTS AND DISBURSEMENTS AND COMPARISON WITH BUDGET—YEAR ENDED DECEMBER 31, 1941

	Actual Receipts and Disbursements				
	Budget Provisions For Year 1941	Period January 1, 1941 To May 15, 1941	Period May 16, 1941 To December 31, 1941	Total For Year 1941	Budget Over Provided and/or Under/Over Expended
RECEIPTS.					
Current and Back Dues (Refunds of \$265.00					
Deducted From Actual Receipts)	\$ 12,300.00	\$ 10,319.78	\$ 2,427.00	\$ 12,746.78	\$ 446.78
Advertising—North Carolina Medical Journal	4,000.00	1,221.60	2,994.65	4,216.25	216.25
Certificate of Deposit No. 83	—	—	3,000.00	3,000.00	3,000.00
To General Checking Account	—	—	377.22	377.22	377.22
Refund—Legislative Committee	—	—	123.86	248.86	—1.14
Interest	250.00	123.00	17.42	17.42	17.42
Sale of Transactions and Journals	—	—	6.00	6.00	6.00
Subscriptions to Journal	—	—	—	—	—
Total Receipts	\$ 16,550.00	\$ 11,666.38	\$ 10,946.15	\$ 22,612.53	\$ 6,062.53
DISBURSEMENTS:					
All Officers Except Secretary:					
Stationery	\$ 100.00	—	\$ 94.44	\$ 94.44	\$ 5.56
Councilors' Travel Expenses	250.00	—	250.00	250.00	—
President's Travel Expenses	400.00	—	400.00	400.00	—
Executive Committee	500.00	251.44	230.96	152.10	17.60
Other Committees	600.00	8.16	300.00	308.16	291.84
State Meeting Reporting	600.00	—	515.72	515.72	84.28
A. M. A. Delegates	300.00	—	300.00	300.00	—
Guest Speaker (Dr. Lahey)	100.00	—	100.00	100.00	—
Total	\$ 2,850.00	\$ 259.60	\$ 2,191.12	\$ 2,450.72	\$ 399.28
Secretary's Office:					
Salary	\$ 2,400.00	1,200.00	1,300.00	2,500.00	—100.00
Salary—Dr. Long (Ex. Com.)	600.00	—	—	—	600.00
Clerical Assistance	1,200.00	400.00	800.00	1,200.00	—
Stationery	100.00	—	38.73	38.73	61.27
Rent	300.00	100.00	200.00	300.00	—
Traveling Expenses	600.00	250.00	375.00	625.00	—25.00
Auditing	65.00	31.50	31.00	62.50	2.50
Miscellaneous and Emergency:					
United States Defense Bonds	(—)	(—)	5,032.00	5,032.00	(—)
Transfer to Savings Account	(—)	(—)	1,000.00	1,000.00	(—)
Postage	(—)	8.80	111.86	120.66	(—)
Fire Insurance	(—)	(—)	64.74	64.74	(—)
Telephone and Telegraph	900.00	19.92	44.32	64.24	(—)
Taxes	(—)	8.96	14.83	53.79	—5,556.70
Secretary's Bond	(—)	(—)	50.00	50.00	(—)
Office Supplies	(—)	24.30	17.53	12.05	(—)
Flowers	(—)	12.74	—	12.74	(—)
Resolution—Winston-Salem Journal	(—)	8.96	—	8.96	(—)
Dr. Haywood Portrait	(—)	(—)	7.57	7.57	(—)
Total	\$ 6,165.00	\$ 2,065.35	\$ 9,117.58	\$ 11,182.93	\$ —5,017.93
TOTAL RECEIPTS Forwarded	\$ 16,550.00	\$ 11,666.38	\$ 10,946.15	\$ 22,612.53	\$ 6,062.53
DISBURSEMENTS:					
All Officers Except Secretary—Forwarded	\$ 2,850.00	\$ 259.60	\$ 2,191.12	\$ 2,450.72	\$ 399.28
Secretary's Office—Forwarded	6,165.00	2,065.35	9,117.58	11,182.93	—5,017.93
Total Disbursements Forwarded	\$ 9,015.00	\$ 2,324.95	\$ 11,308.70	\$ 13,633.65	\$ 4,618.65
NORTH CAROLINA MEDICAL JOURNAL:					
Editor's Salary	\$ 1,200.00	\$ 100.00	\$ 700.00	\$ 1,100.00	\$ 100.00
Associate Editor's Salary	900.00	—	825.00	825.00	75.00
Rent	300.00	100.00	175.00	275.00	25.00
Printing of Journal	5,000.00	1,553.31	3,516.52	5,071.83	—71.83
Total	\$ 7,400.00	\$ 2,053.31	\$ 3,216.52	\$ 7,271.83	\$ 128.17
Total Disbursements	\$ 16,415.00	\$ 4,380.26	\$ 16,525.22	\$ 20,905.48	\$ —1,490.48
EXCESS OF RECEIPTS OVER DISBURSEMENTS— FOR THE YEAR (To Exhibit "B")	\$ 135.00	\$ 7,286.12	\$ —5,579.07	\$ 1,707.05	\$ 1,572.05

(— Indicates amount budget was underprovided or overexpended.

Exhibit "B"

AVAILABILITY OF FUNDS—DECEMBER 31, 1941

Unencumbered and Unappropriated Funds

Held January 1, 1941:

Funds on Deposit—Citizens

Bank & Trust Company

Roanoke Rapids, N. C.:

Checking Account \$ 6,141.65

Certificate of Deposit

No. 74 5,000.00 \$ 11,141.65

Savings Account—Bank of

Halifax, Weldon, N. C.

Certificate of Deposit No. 58 2,500.00

Put into General Checking

Account 1,000.00 \$ 14,641.65

Add—Excess of Actual Receipts Over

Disbursements For the Year (Per

Exhibit "A") \$ 1,707.05

Interest Accrued—But Not Actually

Received 157.77 1,864.82

Unencumbered and Unappropriated

Funds Held December 31, 1941 \$ 16,506.47

Balance—December 31, 1941

Composed of:

Funds on Deposit, The Scottish

Bank, Red Springs N. C.:

Checking Account—

(Per Exhibit "C") \$ 5,348.70

Savings Account 1,600.00 \$ 6,948.70

Savings Account—Bank of Halifax,

Weldon, N. C. 5,125.77

Investment in United States

Defense Bonds 5,032.00

Total—December 31, 1941 \$ 16,506.47

Exhibit "C"

RECONCILIATION OF FUNDS ON DEPOSIT WITH BANK

December 31, 1941

THE SCOTTISH BANK,

Red Springs, North Carolina

BALANCE—Per Bank Statement \$ 5,758.82

Add—Deposit in Transit 32.00 \$ 5,790.82

Deduct—Outstanding Checks:

Number	Payee	Amount
27	R. G. Rosser—Refund	\$ 8.00
90	Hubert B. Haywood	50.00
91	C. H. Robertson	9.00
92	Penry Aitchison Printing Co.	375.22

Total Outstanding Checks \$ 442.22

BALANCE—Per Records of Treasurer

(To Exhibit "B") \$ 5,348.70

sworn in while there with the view of being ordered to active duty within fourteen days.

The medical profession still has in its hands the procurement of the necessary physicians and will still hold this responsibility unless it falls down on the job from now until June 30. Until June 30, the procurement of necessary physicians is on a voluntary basis and, if the quota is not supplied on that basis by that time, the medical profession will have lost its opportunity to do this work.

There are about 13,340 doctors in the army now. By December 31, 1942, the plan is to have 27,115.

The North Carolina Medical Journal is well into its third year of publication. It has already attained enviable recognition among comparable state medical journals. This is due in large measure to the unselfish, conscientious and devoted efforts of Dr. Wingate Johnson and his daughter, Miss Catherine Johnson, who have given unstintingly of their time and energy to attain the recognition which the North Carolina Medical Journal richly deserves.

One thing I should like to stress is that the North Carolina Medical Journal is YOUR journal, the official organ of the Medical Society of the State of North Carolina, owned and published by the Medical Society of the State of North Carolina. The North Carolina Medical Journal belongs to YOU.

As your business manager for the past year, I should like to say, I am making every effort to keep up the high grade of advertising by high grade advertisers. You can help our Journal by patronizing the firms advertised and by letting them know that you read their advertisements in the North Carolina Medical Journal, as well as by sending in news notes of general interest, and reports of county and district society meetings. We are dependent upon the secretaries of the component county societies for programs, resolutions and items of general interest about their members.

The number of subscribers to the Journal as well as the number of advertisements has increased in spite of conditions necessitating a slight increase in advertising rates effective January 1, 1942. The May issue just off the press contains twenty-eight full pages in the advertising section, which is the largest number ever run in this section. I am anticipating that the entrance of so many physicians into military service may have a somewhat adverse effect on the circulation, at least temporarily. The increased cost of publication due to advanced prices for printing supplies, etc., will probably give your Editorial Board some headaches; but, with the co-operation of every one of you, even this obstacle can be overcome.

The receipts and disbursements for the North Carolina Medical Journal as of December 31, 1941, are as follows:

Receipts:

Society Appropriation	....\$ 7,400.00
Advertisements	..... 4,216.00
Subscriptions and	
Sale of Journals	..... 23.42
Total	.....\$11,639.42 \$ 11,639.42

Expenditures:

Editor's Salary	.....\$ 1,100.00
Assistant Editor's Salary	..... 825.00
Rent	..... 275.00
Printing of Journal 5,071.83
Total\$ 7,271.83 \$ 7,271.83

Excess of Receipts over Expenditures \$ 4,367.59
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Since the last meeting of the House of Delegates, the Executive Committee has held one meeting—on December 7, 1941, at the Sir Walter Hotel in Raleigh. The minutes of that meeting were published in the January, 1942, issue of the North Carolina Medical Journal.

Gentlemen, this is my report of activities since the last annual meeting of the Medical Society of the State of North Carolina. Mistakes I have doubtless made, but I have at least the consolation and assurance of knowing that I have made an honest and an earnest effort to carry out the duties of this important office in a satisfactory manner. My heart is right in the work and, though my head may not at all times have been clear, I take a degree of satisfaction from the scriptural passage: "As a man thinketh in his heart, so is he."

President Griffith: Dr. McMillan, we appreciate this excellent and complete report, and we thank you.

I believe Dr. McMillan has something else to bring up, gentlemen.

Secretary-Treasurer McMillan: Mr. President and members of the House of Delegates, a new society, the Mitchell-Yancey Counties Society, was organized late in the year 1941, with the approval of the Tenth District Councilor, Dr. Harold S. Clark. This

society has seven members and has been functioning all the year, paying dues through the secretary, Dr. Mary B. H. Michal. This new society is asking for a charter.

President Griffith: Do I hear a motion to give them a charter?

... On motion of Dr. J. A. Elliott, duly seconded and carried, the House of Delegates voted to issue said charter.

President Griffith: We shall now have the reports of the Councilors.

Dr. H. D. Walker, Elizabeth City:

Report of Councilor for the First District

As Councilor of the First District I have nothing of interest to report. The doctors in my district have been very busy, and we have not had as many meetings as in previous years. At our last meeting a few weeks ago, held at Windsor, we had with us our President, Dr. Griffith, and our Secretary-Treasurer, Dr. McMillan, and Dr. George Mitchell, Councilor of the Fourth District. They all gave very interesting and instructive talks.

If we have enough doctors left in the First District, and if the ones left are not too busy and can get enough tires and gasoline, we shall have our next meeting at Nags Head some time in July.

Second District—No report.

Third District—No report.

Dr. C. W. Mitchell, Wilson:

Report of Councilor for the Fourth District

I should like to say that every county in the Fourth District is organized, with one exception, which is Northampton. It seems that it is almost impossible to have a county society in Northampton. The larger number of those men are members of the Halifax County Society, however, and we can say that the entire district is organized. Affairs are running smoothly, and there is no dissension in the district.

Fifth District—No report.

Dr. George L. Carrington, Burlington:

Report of Councilor for the Sixth District

Mr. President and Members of the House of Delegates:

During the past year there have been to our knowledge two malpractice suits held in the Sixth District against members of this Society. Both cases were non-suited by the presiding judge. In one instance, however, the doctor is again being sued by the same plaintiff for the same thing, but on slightly different grounds. That, off-hand, to a person not trained in legal affairs would appear to be putting the doctor in jeopardy twice for the same alleged offense.

Recently in Alamance County the Federal Government through one of its departments, has endeavored to institute a system embodying many principles of State Medicine for the farmers and for such other people as might live on farms. I regret to say that in the opinion of your councilor and of most of the members of the County Society the attempt to introduce the system was done in an underhanded and dishonest manner. This is particularly regrettable at a time when there should be mutual confidence and unity in the nation. It presages apparently an attempt on the part of the politicians to take over medical practice at the end of the war. It would seem that here, as in other fields, the best defense may be to attack. It would now seem advisable for doctors, instead of waiting for the politicians to attack them, to take the offensive and to keep the public constantly informed about the progress of medicine under an independent system and

to call attention equally constantly to the muddlings and inefficiencies and dishonesties so frequent in political set-ups.

Recently in this district an organization endorsed by this Society engaged a chiropractor to educate the public in preventive medicine. A local representative of the Woman's Field Army of the American Society for the Control of Cancer engaged a local chiropractor to speak over the radio in Burlington during the course of their so-called "educational campaign". Happily we heard of the thing before the broadcast and were able to have the program called off, and so prevent this travesty on education in preventive medicine. Both Dr. H. B. Ivey of the Cancer Committee, which has some supervision over the Field Army, and Mrs. George Marshall, State Commander of the Field Army, have expressed their disapprobation of the engagement of the chiropractor. This instance, however, emphasizes the necessity for care in exercising the endorsement power and the necessity for diligence in supervising delegated authority.

Dr. Robert H. Crawford, Rutherfordton:

Report of Councilor for the Seventh District

As Councilor for the Seventh District I have no special report to make. The work in the different county societies has gone along harmoniously. We had a good district meeting in Gastonia in September, which was attended by our President and Secretary. The Federal Government attempted to introduce socialized medicine in our district through the Farm Security Administration, but we were able to check that.

Dr. James H. McNeill, North Wilkesboro:

Report of Councilor for the Eighth District

Mr. President and members of the House of Delegates: As trouble shooter for the Eighth District I take great pleasure in telling you I have had no trouble to shoot. Things are going along smoothly, and the component societies have been functioning well. I have visited the Snrny-Yadkin, Guilford, Forsyth and Wilkes-Alleghany Societies, and have heard no complaint. I heard General Clemmons talk to the Forsyth County Society on the procurement of medical officers, and transmitted that information to other counties in the district.

There are several men who are not in good standing in our societies or members of the State Society. I think the local secretaries ought to get on their toes and enroll every eligible man as a member of a county society.

We have had two meetings, one last fall, when we had some good papers, and one in North Wilkesboro this spring, when we were honored by the attendance of our President and Secretary.

Dr. I. E. Shafer, Salisbury:

Report of Councilor for the Ninth District

The annual meeting of the Ninth District Medical Society was held Thursday afternoon and evening, Sept. 25, 1941, at the Vance Hotel in Statesville, with about one hundred present. In the afternoon there were interesting papers and discussions on timely topics. The evening session—a dinner meeting—with Dr. James W. Davis as Toastmaster, opened at 7:30. A motion picture, "Intravenous Anesthesia", was enjoyable and informative. Dr. I. G. Beall, of Black Mountain, was guest speaker.

The Rowan County Medical Society sponsored a postgraduate course in medicine, which began March 31, 1942, and continued for six weeks, ending May 5, 1942. The course consisted of an afternoon clinic and a dinner lecture, and was most successful, being attended by sixty-five doctors from various parts of the district.

There has been a drop in attendance at our meetings due to war conditions. Many of our men are now in the service of the Army and Navy. We are planning to have a meeting of the Ninth District Society at Lenoir, next September, unless prevented by war conditions.

Tenth District—No report.

President Griffith: I thank the Councilors for these fine reports we have heard.

Next comes the report of the Delegates to the American Medical Association. I will ask Dr. McElwee to make the report.

Dr. Ross S. McElwee, Statesville:

Report of Delegates To The American Medical Association

North Carolina had three delegates at the Cleveland meeting of the American Medical Association, each of whom attended every meeting of the House of Delegates. The state was honored by having one of its delegates placed on the Reference Committee on Medical Education.

Naturally the military preparedness program came in for most attention in the deliberations of the House. The A. M. A.'s Committee on Medical Preparedness, with Dr. Irvin Abell as chairman, has done an enormous amount of work in listing and classifying physicians for service, either military or civil. The report of this committee has been given such wide publicity that it need only be mentioned.

Great interest was shown in the recent prosecution of the American Medical Association by the Federal Government's Department of Justice. By unanimous vote of the House, the Trustees of the Association were authorized to appeal from the jury's verdict.

A significant trend was the demand of the general practitioners for more recognition. A number of resolutions were introduced asking: (1) for the creation of a section on general practice, and (2) for the formation of a Board to certify general practitioners. The first request was granted. The second was not approved, on the ground that it would further complicate the process of specialization, and might work a hardship on many worthy medical men.

As the result of a study being made by a committee headed by Dr. Reginald Fitz, it was recommended that an annual examination be made of medical students and interns, since an undue proportion have been found to have tuberculosis.

The election of officials for the coming year was so peaceful as to be really shocking to your delegates. North Carolina can take just pride in the unanimous election as president-elect of Dr. Fred W. Rankin, whose home is now in Lexington, Kentucky, but who is a native North Carolinian with tar still on his heels.

In keeping with the national policy of fostering friendly relations with South American countries, it was agreed that the 1942 meeting in Atlantic City should be a Pan-American affair.

While this meeting was sobered by consideration of the world conflict and the part organized medicine must take in it, it was also marked by the spirit of whole-hearted harmony that for the past several years has been evident in the gatherings of the American Medical Association.

W. T. Rainey, M. D.

Ross S. McElwee, M. D.

Wingate M. Johnson, M. D.

President Griffith: Dr. McElwee, we thank you for that most excellent report of the Delegates to the American Medical Association.

Gentlemen, what are your wishes in regard to it?

. . . On motion, duly seconded and carried, the report was adopted.

President Griffith: Next is the report of the Delegates to the Medical Society of Virginia. They are Dr. D. W. Holt, Dr. Robert E. Smith, Dr. John C. Tayloe, and Dr. W. G. Suiter. Is there any report from these gentlemen?

. . . No report.

President Griffith: We will go on to the next thing on the program, which is the report of the Delegates to the South Carolina Medical Association. They are Dr. Yates Faison, Dr. W. D. James, and Dr. E. S. Bulluck. Is there any report?

. . . No report.

President Griffith: Next we shall have the reports of two committees, which will be considered together. The first is that of the Advisory Committee to the North Carolina Industrial Commission, of which Dr. M. A. Pittman, of Wilson, is Chairman.

Dr. M. A. Pittman, Wilson:

Report of Advisory Committee to the North Carolina Industrial Commission

The Special Advisory Committee to the North Carolina Industrial Commission met with the Commission five times during the year ending May 11, 1942.

Details of cases on appeal, including correspondence from the doctors or hospitals to the Commission, were sent us several days before each meeting, so that our committee would be familiar with each case before the final review. Our first meeting with the Commission required an entire day to dispose of only ten cases, our committee recommending an increase in all but one. Everything was discussed at this meeting, from "how the insurance dollar is spent" to the question of revising the fee schedule—some of the discussion bordering on verbal warfare. We left that day feeling that we had accomplished something.

At our second meeting everything appeared more harmonious, and about twenty cases were reviewed during the day. At our third meeting, on March 3, 1942, we met not only with Dr. Horton and his secretary but with the entire Commission. On our individual desks were placed copies of the following letter:

Dr. M. A. Pittman, Chairman

Dr. N. P. Battle,

Dr. Foy Roberson, Special Advisory

Medical Committee

Medical Society of the State of N. C.

Dear Doctors:

The Industrial Commission appreciates the friendly relationship of the Special Advisory Committee for the past seven years, and through co-operation the Commission feels a real service has been and can be rendered the medical profession, the Industrial Commission, the employers, and employees in the future.

While your Committee is what the name states, i.e., Advisory, the Commission has accepted its decisions in the past. However, we are taking the liberty of re-referring to you for further consideration the ten bills that you considered at your first meeting December 5, 1941. These ten cases include those where you sustained Dr. Horton and those increased. The Commission has accepted your decisions at the second conference of December 30, 1941, even though we differ with the reasoning used in the approach. The Commission feels that the Committee has not given full consideration to Rules 6, 7, 8, and 9 of the Medical Fee Schedule adopted in 1936 (Revised 1939) with

the approval of a special committee from the Medical Society of the State of North Carolina. The rules are as much a part of the fee schedule as the specific fees. The Commission wants to emphasize to you Rule 7 as to daily visits and Rule 9 as to concurrent treatment.

Your Committee is in position to render invaluable service in the administration of the Workmen's Compensation Law. Your careful study and education of members of your Society can aid the Commission in minimizing and preventing charges not in keeping with a reasonable interpretation of the Fee Schedule.

Realizing each of you are very busy in your extensive private practice; that due to war emergency there is a shortage of medical doctors; and that you are serving without financial remuneration, Dr. Horton is redoubling his efforts to settle medical questions and bills without being referred to your Committee. Exclusive of the 16 bills appealed by Dr. Black (ten others settled by Dr. Horton) there are only five additional bills referred to your Committee since your last meeting December 30, 1941.

Respectfully submitted,

T. A. Wilson
Buren Burney
Pat Kimzey

I have reviewed these first three meetings in detail to acquaint you better with what actually takes place and to impress on you the fact that our committee is what the name implies—advisory in its function.

During the past year there were 106 doctor's bills submitted for revision, with the following results: 30 cases were reestablished as rendered; 48 increased from \$1.00 to \$50.00; and 5 postponed to await additional information. Of 101 cases passed on, 78 per cent were increased. There were only 10 hospital bills appealed. Five of these were increased and one postponed for additional information; 5 of the 10 cases represented one hospital. This small number is due to the fact that the North Carolina Hospital Association on August 11, 1941, succeeded in having the following schedule accepted by the Industrial Commission, which should eliminate future difficulties. If hospitals establish their ward and private room rates with the Commission and make their bill as they would to any other patient, the Commission will approve these bills with the exception of the limitations set out in the new hospital fee schedule:

Fee Schedule for Hospitals and Nurses, Accepted by the Commission August 11, 1941

"The hospitals in North Carolina will service all industrial cases at rates accepted from those not coming under the Workmen's Compensation Act with account being taken of the social status of injured workers, and their physical condition when assigned to ward, semi-private or private rooms.

"Hospital rates include room and board, general nursing.

Ward bed, or bed in semi-private room,	
per day, not to exceed	\$4.00
Private room, per day, not to exceed	5.00
Operating room	\$2.50 to 10.00

In addition to the regular advertised per day rate for ward, semi-private or private room, which per day rate does not include operating room, anesthesia and x-rays, the Commission will approve a maximum allowance of \$5.00 to cover ordinary drugs and dressings and routine laboratory, EXCEPT when shown by itemization the EXTRA-ORDINARY drugs, dressings and laboratory are required. ROUTINE LABORATORY will consist of the following:

One white blood count, one differential, one red blood count, one hemoglobin, three urinalyses, and one Wassermann and/or one Kahn. ORDINARY DRUGS AND DRESSINGS will consist of the following: All laxatives, narcotics, analgesics and sedatives; all necessary dressing in ordinary cases. The foregoing applies to hospitals whose per day rates include only bed, board, and general nursing care.

"Charges for a private room will not be approved unless and until it shall have been shown that private room treatment was necessary. Injured workmen whose social status nor physical condition call for semi-private or private room service will be approved ward service except when the attending physician or surgeon recommends in writing such service and the employer also approves in writing such higher rate service. These recommendations and approvals must accompany Form 25."

I have with me today a complete alphabetical file on all the cases presented to us during the year with our recommendations and reasons for our conclusions. I am going to read one or two, mentioning no names, so that you may become better acquainted with the problems of the committee.

At our meetings these case records, including the correspondence from the doctor to the commission, are read. An attempt is then made to adapt the case to the schedule, not losing sight of the fact that social status, and rules 6, 7, and 9 especially have to be considered. To refresh your memory, I will quote these rules, which seem to be in most cases overlooked.

"No. 6. Where the schedule allows a flat fee, it is not permissible to charge additional fees for visits, dressings, treatment, etc.

"Example, a compound fracture of humerus would be \$75.00 plus \$37.50 or a total of \$112.50. Should this fracture become infected and required frequent dressings, they would all be covered by the flat fee.

"No. 7. In cases where no flat rate for full treatment has been provided charges for daily dressings or visits will not be allowed unless the necessity for the same is clearly shown. In such cases, and where reports show a high treatment frequency or protracted treatment, the Commission will reduce the per visit charge so as to bring the total cost within a reasonable flat rate for full treatment."

This rule causes more hard feelings between the parties involved than anything with which we are confronted. Should a doctor dress a lacerated foot, without mentioning anything about infection, daily for eight or ten days the commission applies rule no. 7. I feel that this at times is an injustice to the doctor, as no one but himself knows the actual situation of the case being treated. At our last few meetings, we reached an agreement to allow in long drawn out cases an average of three to four dressings each week.

"No. 9: Fees will not be approved for the services of more than one attending physician or surgeon over the same period of time, except by order of the insurance carrier, self-insuring employer, or the Industrial Commission."

For example, a patient with a fractured tibia and fibula is sent to Dr. A who gives first aid. Dr. A calls on Dr. B, a specialist, who reduces the fracture and applies a cast. Dr. A continues to drop in and visit the patient. Dr. B, the specialist, sends in his flat rate bill, which is paid later. Dr. A sends in a bill for his visits, amounting to almost as much as the flat rate for the fracture. Dr. A feels that it is his duty to visit the patient, who may be one of his regular patients, and feels that he should be compensated for his visits. In these cases, we recommend paying Dr. A for first aid and Dr. B the flat rate. We can do nothing else, according to the schedule.

The rule covering social status states that a low wage earner must be placed in a ward unless there is a written request from the attending physician or employer. This rule likewise holds for office or house visits. Example: Office visits are from \$1.00 to \$2.00. A low wage earner would take the \$1.00 rate, whereas the high wage earner would take the \$2.00 rate. Social status is considered because the insurance premium is based on the payroll or salary of the worker, rather than on the number of workers in a given plant. His compensation while injured is worked out the same way, being 60 per cent of his salary.

If there is anyone who had a case before our committee and disagreed with our findings, I shall be glad to attempt to show how we reached our decision.

I want to suggest that every man doing compensation work familiarize himself with the schedule and if he doesn't like the schedule, start at the bottom and have it changed. Our committee has worked

together faithfully and harmoniously for the benefit of the doctors, and if you have failed to appeal your cases to us, criticize yourself only. There should also be more cooperation between the North Carolina Medical Society as a whole, and its special advisory committee. If you think the committee favors the Commission instead of the Society, do away with the committee. Any adjunct committees appointed by the society to investigate the Industrial Commission should consult the advisory committee. To fail to do this will leave the impression that this committee is not functioning properly.

In conclusion, I wish to repeat that every bill referred to us has been thoroughly and carefully studied and adapted to the fee schedule to the best of our ability and belief, without favor or prejudice to anyone. We disagreed with the Commission in 78 per cent of the cases with benefit to the individual doctor. We all belong to the same society, and should work to the same end.

Year Submitted	Amount Submitted	Amount Approved	Total Reduction	Percent Reduction	Number Submitted	Number Reduced	Percent, of Bills Reduced
1939	\$736,043.04	\$661,605.39	\$ 74,437.65	10.1%	58,565	8,570	14.6%
1940	780,577.38	698,263.02	82,314.36	10.5%	61,202	11,675	19.0%
1941	994,663.31	882,374.15	112,289.16	11.2%	80,344	17,044	21.2%

During 1939 we note that there has been a reduction of \$1.27 per bill submitted, or a reduction of \$8.70 per bill reduced.

During 1940 we note that there has been a reduction of \$1.34 per bill submitted, or a reduction of \$7.05 per bill reduced.

During 1941 we note that there has been a reduction of \$1.40 per bill submitted, or a reduction of \$6.60 per bill reduced.

President Griffith: Dr. Pittman, we thank you for this complete report. Before we have any discussion on this we will have the report of the next committee, which is the one appointed to confer with Governor Broughton in regard to the cutting of fees by the Industrial Commission. Dr. J. A. Elliott is the chairman of that committee.

Dr. J. A. Elliott, Charlotte: I should like to say, Mr. President, with regard to the cutting of fees because of the low earnings of certain employees, that Governor Broughton said he saw no reason for it and that he wrote the Act.

Report of Committee to Confer with Governor Broughton

Your committee to confer with Governor Broughton in regard to cutting fees by the Industrial Commission thought it wise to collect a reasonable number of records where the fee charged had been reduced before going before the Governor. Each member of this committee was therefore asked to make a collection and to be prepared to present them to the Governor. We then made a study of the Industrial Commission's last biennial report with the view of comparing industrial medical fees in our state with those in South Carolina and Virginia. We next wrote to a number of colleagues throughout the country for information as to fees allowed in their respective states. This permitted us to make a comparison of fees allowed for specific types of medical services in the various states. Finally, we wrote to the Medical Director of Dermatoses Investigations of the United States Public Health Service asking him his views as to reasonable fees for specific services.

Early in October we completed our investigations and asked for an audience with the Governor. This was granted on October 28. At this conference, the resolution passed by this House of Delegates last year asking the removal of Dr. Horton as Medical Director of the Industrial Commission was read. We then presented the following facts: (1) The cost per

case for medical care only in North Carolina for the year 1939-1940 was \$6.63. In Virginia it was \$8.27, or an increase of 24.7 per cent over ours, and in South Carolina it was \$8.61, or an increase of 29.9 per cent over ours. (2) The cost of total medical care per patient, which includes hospitalization, nurses, and dental fees and cost of drugs was cut from \$21.35 in 1929 to \$13.39 in 1939, a reduction of 37.2 per cent. For medical care only this reduction was from \$7.91 in 1929 to \$6.63 in 1939, a decrease of 16.2 per cent. (3) Doctors' fees constitute 52 per cent of the medical cost in South Carolina, 43 per cent in Virginia, and only 36 per cent in North Carolina. (3) Total insurance premiums collected in North Carolina in 1939 were \$3,831,419.00. The total cost of compensation and medical care was \$1,758,097.00 or 45.6 per cent of collected premiums. The Insurance Commissioner's figures are somewhat lower than the ones quoted in the Industrial report. He states that 44.1 per cent was used for compensation. (5) In 1940, the Commission reduced medical bills \$82,314.36. (6) Reports from physicians in other states indicate that their bills were collected as presented. (7) A large number of our bills which had been reduced by the Commission were presented to the Governor in detail.

The Governor gave generously of his time and listened with interest to our presentation. He stated that he would interview the Commission and would, within two weeks, arrange a joint meeting of the Commission and our committee. This meeting was held in the Governor's office on November 10. A full and free discussion was entered into which lasted for two and one-half hours. At the end of the conference the Governor instructed the Commission as follows: (1) Approve all bills submitted by doctors when the schedule is adhered to. (2) Give the doctor the benefit of the doubt in questionable cases. (3) Study the prevailing fees in various communities and be guided thereby in office-visit allowances.

Our committee felt well pleased with the sympa-

thetic attitude of the Governor towards our cause, and as a result of these conferences there should be a better understanding between doctors and the Industrial Commission.

In a recent interview with the Chairman of the Industrial Commission he assured me that bills will not be cut if the rate schedule is followed and frequency of visits is within reason. He further told me that he would welcome a conference with any group or groups to discuss differences that may arise.

We urge you to obtain a printed fee schedule, study it carefully, follow it religiously in preparing your bills, then with bulldog tenacity insist on being paid. We further recommend that the schedule of fees as adopted in 1929 be carefully reviewed, with the view of making such changes as are necessary to meet present day conditions.

President Griffith: Doctor, we thank you for this excellent report. I know of no committee that during the whole year has done any better work.

May I hear a motion for the disposition of these two reports?

... On motion of Dr. G. W. Mitchell, seconded by Dr. C. F. Strosnider, Dr. Pittman's report was accepted.

... Dr. Elliott's report was likewise accepted, on motion duly seconded and carried.

President Griffith: The next report is that of the Board of Medical Examiners, of which Dr. W. D. James, of Hamlet, is Secretary. Dr. James.

Dr. W. D. James, Hamlet:

Report of the State Board of Medical Examiners

The Board of Medical Examiners held their annual meeting June 16-20, 1941, in Raleigh, North Carolina. Doctors William M. Coppridge, J. Street Brewer, Lester A. Crowell, Jr., Frank A. Sharpe, Lewis W. Elias, Karl B. Pace and W. D. James were present.

Fifty-four physicians were licensed by examination and forty-five physicians were licensed by reciprocity. All were graduates of grade A medical schools. On July 16, five physicians were licensed by reciprocity, and twenty-four were licensed on December 10, by reciprocity.

President Griffith: Thank you very much, Dr. James.

What shall we do with this report, gentlemen?

... On motion, duly seconded and carried, the report was accepted.

President Griffith: Next we shall have the report of a special committee which was appointed to study the feasibility of refunding the State Medical Society dues to the fellows of the Society who are in the armed forces of the United States. Dr. George W. Mitchell, of Wilson, is the chairman.

Dr. George W. Mitchell, Wilson: Mr. Chairman and gentlemen: We studied this matter and found that the Constitution will not permit the refunding of dues to any member. As you know, the Constitution requires that an honorary fellow shall have paid his dues for thirty consecutive years; obviously it is unfair to a man who has been a member of the State Medical Society for ten years, and who is in the Army for three or four years, to have to begin all over again. That brings up the question of finding some way to get around the continuous payment of dues for thirty years. It is going to require an amendment to the Constitution, and that is what we recommend.

Report of Special Committee to Consider Refunding Dues to Members Serving in the Armed Forces

Our committee appointed by the President at the meeting in Raleigh on December 7, 1941, to consider the status of members of the society entering service, wishes to make the following report:

It recommends that the Constitution be amended as follows, Article IV, Section 6 to read: The Honorary Fellows shall consist of such physicians as have been Fellows of the Society continuously for thirty years, and whose dues have been paid during this time, provided that the time necessary for such members being absent on Military or Naval duty, shall not be computed in the requirement of thirty years continuously as a Fellow. They shall be exempt from all dues and fines and shall be entitled to all the privileges enjoyed by active Fellows in good standing.

Dr. Mitchell (continuing): An amendment to the Constitution submitted at this meeting must be sent by the Secretary to each component county society at least two months prior to next year's meeting, and then voted upon at the 1943 meeting. Of course, if such an amendment were adopted it would be made retroactive, so that any member now in service would have his dues refunded for the period of time that he has been in the armed forces.

I move that the Constitution be amended in accordance with the recommendation of the Committee.

Dr. C. R. Hedrick, Lenoir: This amendment does not state that a doctor remains a member of the State Society while in the Army or Navy.

Dr. Mitchell: There is no way to do that, Dr. Hedrick. The only way he can be a member is by paying dues. But it obviates the hardship of his losing his honorary fellowship.

Dr. Donnell B. Cohn, Goldsboro: Instead of making a change in the Constitution, would it be possible to grant a fellow leave of absence during the time he is in military service?

Dr. Mitchell: There is no way, under the Constitution, by which we can remit the dues. In order to do that you would have to change the Constitution in four or five different places.

Dr. William H. Smith, Goldsboro: Mr. President, I make a motion that the Treasurer of the Medical Society of the State of North Carolina be authorized to pay out of the treasury of the State Society the dues of the members of this Society who are in the armed forces of the United States, for the duration of the war and for six months afterwards, which is their term of service.

President Griffith: Do I hear a second to Dr. Smith's motion?

Dr. W. M. Johnson, Winston-Salem: I second it.

Dr. B. F. Royal, Morehead City: Would it be possible or practicable to make the members in service honorary fellows of the Society for the term of the war? That would not penalize either them or the Society financially.

A Member: What was done during the last war?

President Griffith: They did not pay the dues and were left out.

Dr. Mitchell: When the men came back from the war they began over again the payment of dues to attain honorary fellowship.

Dr. C. F. Strosnider, Goldsboro: I wish to offer an amendment to the motion, Mr. President: That we make all members of the Medical Society of the State of North Carolina who are in the armed forces honorary members while they are in the service.

A Member: I second the amendment.

Dr. Smith: That would require a change in the Constitution and would have to lie on the table a year before it could be adopted. The motion I made changes the By-Laws and not the Constitution, and can be acted upon now and can become effective at once.

President Griffith: It has been called to my attention that our Constitution provides that funds may be spent "to defray the expenses of the annual

meeting, for publication, and for such other purposes as will promote the welfare of the Society, the profession, and the people of the State."

Dr. J. L. Winstead, Greenville: I should like to ask the Secretary-Treasurer how much he estimates it would cost to grant the men in the armed forces leave of absence and continue their membership while they are in service.

Secretary-Treasurer McMillan: Mr. President, I imagine the lowest figure would be \$2,000—\$8 per individual.

President Griffith: Gentlemen, I shall ask Dr. Smith to repeat his motion and Dr. Strosnider his amendment, so we shall get this clear.

Dr. Smith: I move the adoption of the following resolution:

"RESOLVED, that the House of Delegates of the Medical Society of the State of North Carolina authorize the Secretary-Treasurer of the State Society to pay out of the funds of the Society, during the period of the duration of the war and for six months thereafter, the annual dues of the members of the Society who are in the armed services of the United States of America."

I think nothing ought to be done to alter the status of these men, as by making them inactive or honorary members. We want to keep them as bona fide active members of this Society while they are giving their services to the country.

President Griffith: Dr. Strosnider, will you now give us your amendment? That has to be voted upon first.

Dr. Strosnider: My amendment was that all members of the Society serving in the armed forces of our country be made honorary fellows during their service.

... The amendment, being then put to vote, was defeated. Dr. Smith's motion for the adoption of the foregoing resolution was then voted upon and was carried unanimously.

President Griffith: I want to thank Dr. Mitchell and the other members of the committee for the work they have done. By your action upon the resolution you have obviated the necessity of action upon their report.

I understand that Mrs. E. C. Judd, Treasurer of the Woman's Auxiliary to the Medical Society of the State of North Carolina, is in the house, and I now recognize Mrs. Judd.

Mrs. E. C. Judd:

Activities of the Auxiliary to the Medical Society of the State of North Carolina

General expenses amounted to \$334.85.

The Auxiliary paid all the expenses for a patient, twelve months at the North Carolina Sanatorium, also for a patient twelve months at the Western North Carolina Sanatorium at Black Mountain.

Loans from the Student Loan Fund enabled two doctors' sons to finish school this year, one at State College and the other at George Washington University. The total loans to four boys and girls at present amount to \$570.00.

The McCain Endowment Fund invested \$20.72 in United States Savings Defense Bonds.

The Auxiliary cooperated with the Medical and Surgical Relief Committee of America, sold mercy emblems, and sent \$807.20 to the above Committee. This amount bought eight emergency medical field sets. Six of these have been placed in North Carolina. The other two will be sent to North Carolina when needed.

President Griffith: Mrs. Judd, we appreciate your coming to us today and telling us about what the Auxiliary has accomplished. You are doing a good work, and we wish you well.

The next report, gentlemen, is that of the Advis-

ory Committee on Maternity and Infancy for the Children's Bureau, of which Dr. Aldert S. Root, of Raleigh, is Chairman, Dr. J. Buren Sidbury and Dr. Bayard Carter being the other members. Is there anyone present from that committee?

... No report.

President Griffith: We will next have the report of the Advisory Committee to the Woman's Auxiliary, Dr. Caroline McNairy, Chairman. The other members are Dr. C. F. Strosnider, Dr. C. A. Peterson, and Dr. Ben J. Lawrence.

... No report.

President Griffith: Next we shall hear from Dr. H. B. Ivey, of Goldsboro, Chairman of the Committee on Cancer.

Dr. H. B. Ivey, Goldsboro:

Report of Cancer Committee

The Committee was confronted with a most difficult task this year. The physicians as well as people in general are agitated by the war. Their thoughts, time and energy have been devoted to this work. This is as it should be. In these strenuous days the profession has been very tolerant and cooperative.

The Committee has held three meetings this year, two in Goldsboro and one at Winston-Salem. We decided to devote all our work to seniors in the colleges and high schools.

All the colleges except one had lectures to their senior classes. Literature was furnished to the seniors in this other college.

The Committee furnished 10,000 pamphlets entitled "The Story of Cancer for High School Students," and these were distributed to seniors in high schools of the state.

We had twenty-five electric transcriptions made with a three and a half minute message from the Committee to the general public. These were used by broadcasting stations over the state. The following is the text of this message:

"The radio and newspapers are issuing warnings every hour of the day telling us about our enemies in the many countries and on the many fronts of the world. We want to issue a warning that concerns each and every one of you. We want to warn you of a common enemy that works on every front — on the battlefield and off the battlefield. He works in every land, among men in the service, in their families, affecting not only men but women and children. That enemy is cancer.

"This sneaking, deceiving deadly enemy is no respecter of persons. It destroyed 158,000 people in this nation last year. It killed 2,059 persons in our own state last year, almost as many as were killed at Pearl Harbor in December by our treacherous enemies. We are all wrought up by the Pearl Harbor disaster and justly so. Should we not also be disturbed by this insidious disease, cancer, that is almost as destructive to mankind as war? We think so.

"We know the demands of war time are great, but the demand to maintain our health is also great. In order to give the best account of ourselves in this struggle for our lives we must stay physically fit. We must keep the families of the men in the front lines well in order to keep them in the best possible frame of mind. In order to do this it behooves us to be eternally on guard against disease and especially this deadly one, cancer.

"Cancer is a curable disease if recognized and treated early, but a very fatal one if allowed to get too great a foothold. You often hear today this expression: 'Help was too little and too late.' This is just as applicable in cancer as it is in war.

"We urge you to seek knowledge about this disease in order to defend yourselves, your family and

your friends. We shall not repeat to you the simple first signs of cancer, which you probably already know, but we beg you to enlighten yourself on this subject. You can get this information from your family doctor, your county health officer or from the Womens Field Army of the Society for Control of Cancer in your county. This last named agency is an organization of women whose business is to give every one information about cancer. You would do well to join this organization. We plead with you to get this information for your benefit and safety. We also plead with you to have a general examination by your family doctor once a year as a safeguard against cancer.

"This message is brought to you by the Cancer Committee of the North Carolina Medical Society."

The Women's Field Army has functioned very well this year in adult education, but came near causing serious trouble in one district. Thanks to Dr. George Carrington, Councilor in the Sixth District, it was prevented. One of the Field Army workers in this district had secured a chiropractor to deliver a cancer talk over the radio. The Councilor found this out and prevented the catastrophe from happening.

The Committee wishes to take this opportunity to thank the members of this society for their kindly consideration and assistance.

Respectfully submitted:

H. B. Ivey
T. Leslie Lee
C. C. Carpenter.

Expenses of the North Carolina Cancer Committee

Cash on Hand beginning 1941-1942	\$ 429.34
Telephone and telegraph	6.34
Postage and express	24.76
Stationery	30.00
Mimeograph work	1.50
Traveling expenses	20.00
Literature	134.05
Secretarial expense	25.00
Expense of meeting in Goldsboro	6.55
Supplies	2.09
Radio records	55.00
Intangible tax	.17
	<hr/>
	\$ 305.46 305.46

Balance May 11, 1942 \$ 123.88

President Griffith: Dr. Ivey, we appreciate this excellent report. You and your committee for several years have done excellent, constructive work, and we hope you will continue it.

Do I hear any motion in regard to this report?

Dr. C. F. Strosnider, Goldsboro: I move to accept it.

... The motion was seconded and carried.

President Griffith: The next report is that of the Committee on Commercializing Drugs—Dr. James M. Northington, of Charlotte, Chairman, Dr. Julian A. Moore, of Asheville, and Dr. J. B. Johnson, of Old Fort.

... No report.

President Griffith: We will go on to the report of the Finance Committee, of which Dr. Vance P. Peery, of Kinston, is Chairman. The other members are Dr. G. Westbrook Murphy, of Asheville, and Dr. William M. Coppridge, of Durham. Dr. Coppridge will present the report.

Dr. William M. Coppridge, Durham:

Report of Finance Committee

The audit of the Secretary and Treasurer's books was made by George R. Poole, and will be published in the Transactions with the Secretary's report. The

financial condition of the Society is sound, and reflects careful management.

Several changes are suggested by your Secretary and Treasurer, which the Finance Committee endorses. The following is a statement from Dr. McMillan: "You will note that I have listed the Receipts for Current and Back dues for 1942 somewhat lower than for 1941. This is done with the view that a good many men in Army service will not send in their dues. I have increased the item, Advertising (from the Journal) by \$600.00; however, I hope this will run a little higher, and, from all indications, it will. The decrease in interest is because of the purchase of Defense Bonds which will mature in ten years. This \$43.00 interest will be due from \$2500.00 now on savings.

"Under Expenditures, I have listed \$300.00 for the Legislative Committee. I thoroughly agree with you that, if any committee is important, this is one of them; of course, if it becomes necessary, the amount of \$300.00 can be supplemented. I left the other committees at \$600.00, which I feel confident will adequately take care of them. I cut the item, Miscellaneous and Emergency, for the Secretary's Office \$200.00.

"I am preparing for presentation at the meeting of the House of Delegates on Monday, May 11, a report of Receipts and Expenditures from January 1, 1942 to May 1, 1942. In this connection, I am just wondering why it would not be a good idea to have the audit made each year on May 1 instead of December 31. Of course, I realize that the membership year is the fiscal year—that is, January 1 through December 31. I presume that is the reason the date of the audit has not been changed in the past."

Proposed Budget 1942

Receipts:

Current and back dues	\$ 11,142.00
Advertising	4,600.00
Interest	43.00
Total	<hr/>
	\$ 15,785.00

Expenditures:

All Offices	
Except Secretary's:	
Stationery	\$ 100.00
Councilors' Travel	
Expenses	250.00
President's Travel	
Expenses	400.00
Executive Committee	500.00
Legislative Committee	300.00
Other Committees	600.00
State Meeting Reporting	500.00
A. M. A. Delegates	300.00
Guest Speaker	100.00
Total	<hr/>
	\$ 3,050.00 \$ 3,050.00

Secretary's Office:

Salary	\$ 2,400.00
Clerical Assistance	1,200.00
Stationery	100.00
Rent	300.00
Travel Expenses	600.00
Auditing	35.00
Misc. & Emergency	
(Postage,	
Telephone, Etc.)	700.00
Total	<hr/>
	\$ 5,335.00 \$ 5,335.00

North Carolina Medical Journal:

Editor's Salary	\$ 1,200.00
Assist. Editor's Salary	900.00
Rent	300.00

Printing of Journal.....	5,000.00	
Total	\$ 7,400.00	\$ 7,400.00

Total All Disbursements.....	\$ 15,785.00
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... On motion, duly seconded and carried, the report was adopted.

President Griffith: Dr. Coppridge, we thank you.

Gentlemen, there is no further business to come up at this session. We stand adjourned now, until eight o'clock, when we shall again meet in this room.

... Thereupon, at 5 p. m., the House of Delegates recessed until 8 p. m.

MONDAY EVENING SESSION

May 11, 1942

... The House of Delegates reconvened in the ballroom of the Hotel Charlotte and was called to order at 8:30 p. m. by the President.

President Griffith: The meeting will come to order.

Dr. Carrington has something to bring up, and we will hear from him now.

Dr. George L. Carrington, Burlington: Mr. President and members of the House of Delegates: Recently there has been a great deal of confusion among doctors about what to do in the present emergency. There has been confusion as to the proportion of men who can go from different localities. That is particularly troublesome in this state, which stands, I think, third from the bottom in the ratio of physicians to population. There apparently has not been a ratio established as the desideratum for the service of the civilian population after providing the armed forces with the necessary physicians. Several counties have been almost depleted of doctors, because physicians were taken out in apparently large numbers from those particular counties. We have talked this matter over with several men, among them Dr. Hubert Haywood, the Chairman of the Committee on Medical Preparedness, and we have prepared the following resolution for your consideration.

Resolution

In the present national emergency the House of Delegates of the Medical Society of the State of North Carolina recognizes that the needs of the armed forces of the United States for medical officers should be paramount over all other considerations, and to that end pledges its support.

The House of Delegates also recognizes that the civilian population should be protected by judiciously maintaining an equitable distribution of physicians not required for service with the armed forces.

For the guidance of the members of the profession in deciding whether to volunteer for service and for the guidance of the committees in deciding whether to certify physicians as available,

BE IT RESOLVED:

First, that the local and national Procurement and Assignment Committees be requested to cooperate with the other duly constituted authorities in determining the ratio of active physicians to population for the United States that will remain after meeting the needs of the armed forces; and

Second, that in areas where the ratio of physicians to population is markedly less than the average so obtained an endeavor be made to maintain the physicians in civilian practice."

Mr. President, I move the adoption of that resolution, and that motion is seconded by Dr. B. C. Willis, Dr. Joshua Tayloe, Dr. W. M. Coppridge, and Dr. S. C. Spoon, Jr.

President Griffith: Gentlemen, you have heard the

resolution and the motion. Is there any discussion?

... After discussion the motion to adopt the resolution was put to vote and was carried unanimously.

President Griffith: I recognize the Secretary-Treasurer, Dr. McMillan.

Secretary-Treasurer McMillan: At the request of the President I bring up this matter. Dr. George W. Purefoy, of Asheville, 91 years of age, is the oldest living alumnus of the University of North Carolina. He was one of the founders of the Buncombe County Medical Society, later serving as its treasurer and its president. From 1890 to 1892 he served on the State Board of Medical Examiners. He is now confined to bed from the infirmities of age. I move that we send a wire to Dr. Purefoy, expressing our appreciation of his long and faithful service in medicine and extending to him our best wishes.

... This motion was seconded and was carried.

President Griffith: At this time we shall take a recess of ten minutes for the election of the members of the Nominating Committee. The members from each district will get together and appoint their representative on the Nominating Committee, then report to the Secretary.

... A short recess was taken at this point.

President Griffith: Will the meeting come to order, please?

The Secretary will read the names of those chosen to act as the Nominating Committee.

Secretary-Treasurer McMillan: Mr. President, the following names have been turned in to me:

First District—T. L. Carter
Second District—Ben F. Royal
Third District—
Fourth District—W. H. Smith
Fifth District—J. A. Shaw
Sixth District—M. D. Hill
Seventh District—T. D. Sparrow
Eighth District—Fred M. Patterson
Ninth District—C. R. Hedrick
Tenth District—C. A. Peterson

President Griffith: I ask Dr. Sparrow to act as chairman pro tempore of the Nominating Committee. Please get in touch with him and arrange for your meeting. The Secretary will give you the list of officers whom you shall elect.

... Secretary-Treasurer McMillan gave instructions to the nominating committee.

President Griffith: The next report is that of the Committee on Hospitals, of which Dr. J. B. Whittington, of Winston-Salem, is Chairman.

Dr. J. B. Whittington, Winston-Salem: Gentlemen, your Committee on Hospitals has not had a meeting this year. Things have been going so smoothly in the hospital field that we thought it unnecessary to meet. As Chairman of this Committee, however, I wish to call the attention of a good many of you who are not directly connected with hospitals to the financial burden that the hospitals bear. I believe it would be a good thing to call to your attention the strain that the hospitals are under. We are today paying from 25 to 50 per cent more for everything we use, and if you men will only use a little more discretion about supplies it will help us. If you can make a 1-inch piece of adhesive do what a 2-inch piece will do, and if you can tie off with a shorter piece of catgut you have no idea what the saving will be in a year's time. The hospitals are faced today with the problem of either cutting down on their service or raising the rates, which people can not afford. They are also faced with a critical situation as regards personnel.

I want to say that we have one of the greatest children in this country, the Hospital Saving Association. That organization is really a life-saver to

the hospitals at this time, and I want to take my hat off to Dr. Manning for the part he has played in this work. Gentlemen, he deserves a rising vote of thanks.

... The members rose and applauded.

President Griffith: Dr. Whittington, I wish to thank you for this very timely report. What will you do with it, gentlemen?

... On motion, duly seconded, the report was accepted.

President Griffith: The next report is that of the Committee on Industrial Health, of which Dr. E. S. Thompson, of Winston-Salem, is Chairman, the other members being Dr. Easom, Dr. Mann, and Dr. Holt.

... The report of this Committee was filed.

Report of Committee on Industrial Health

The greatest non-military contribution that the medical profession can make to the successful completion of this war is improvement of the health of workers in industry. We are all aware of the necessity for production of large amounts of military equipment from guns and ammunition to clothing for the armed forces in the field. Many national leaders have emphasized the loss to the program resulting from sickness. Dr. Parran, Surgeon General of the U. S. Public Health Service, recently stated that 400 million man days were lost in industry in 1941, and that this amount of time would have built 20,000 bombers or a line of tanks 250 miles long. The Council on Industrial Health of the American Medical Association has increased its activities to assist the state medical societies in carrying out their responsibility in this program, believing that all health programs should be led by and should center around the medical profession.

The increased amount of industrial activity in North Carolina is making it one of the most important of the Southern states in the production of war materials. This industry, as always, is for the most part in small plants, over 90 per cent having less than 500 workers. These plants are cared for by the doctors in private practice, and most, if not all of the workers, receive medical attention for treatment of injuries only. Therefore, to improve the health of workers in North Carolina, it behooves the Medical Society of the State to put into effect a plan which will make it possible for the practicing physicians of this state to discharge better their responsibility.

In addition to the immediate needs in relation to the war effort it must be recognized that the social trends which are operating now and which will become more marked after the war will have a definite influence on the practice of medicine. The extent of the changes will depend to a large degree on the foresight and action of medical societies in meeting the new demands and directing this progress along satisfactory lines. From all appearances, this is toward prepayment medical and hospital plans and more emphasis on preventive medicine. To date, the influences operating indicate industry as the place for instituting and carrying out these steps.

Experience in numerous areas throughout the country has shown that there are definite health and economic benefits from a properly executed plan of medical service in industry. One man states that as much as \$70 per employee can be saved by such medical service, besides the benefit to the worker and the physician.

In recognition of these facts and their implication, the Committee on Industrial Health of the Medical Society of the State of North Carolina recommends that the following program be executed in the ensuing year:

1. Development of a program to acquaint physicians in practice with the modern concepts of preventive industrial health by —
 - a. Consideration of the subject in county society meetings.
 - b. A series of industrial health institutes in various areas in the state, the meetings designed to be of interest to both physicians and industry along lines under consideration.
2. Stimulation of the teaching of industrial health in medical schools.
3. The formation of committees on industrial health in county medical societies to create local interest.
4. Devise a cooperative plan with industrial organizations such as safety councils and chambers of commerce, whereby industries will improve their medical plans through better utilization of the services of the physicians in practice.
5. Establish closer cooperation with the Bureau of Industrial Hygiene of the North Carolina State Board of Health in order that the profession may profit by their experience and contacts in industry and so that the Bureau's program may be broadened.

Respectfully submitted,

E. S. Thompson, M.D., Chairman.

H. F. Easom, M.D.

I. T. Mann, M.D.

D. W. Holt, M.D.

President Griffith: Next is the report of the Committee on Legislation, of which Dr. Hubert B. Haywood, of Raleigh, is Chairman.

Dr. Hubert B. Haywood, Raleigh: Mr. Chairman and members of the House of Delegates: The Committee on Legislation will function when the legislature meets, and a meeting will be called before then. It is the custom, usually, to engage the services of a lawyer to represent us at that time to watch our interests and see that no legislation inimical to the interests of the State Society is introduced, and also to have introduced any bills that we want enacted. I think it is a good idea for the House of Delegates and the constituent units to get together and discuss what they want in the way of legislation. It will be a good thing to do that at least a month before the session of the legislature begins.

Dr. Reynolds has been our guiding star. Of course, as to bills introduced, we usually have to consult the Legislative Reference Bureau to make sure that the bill is not illegal and not overlapping any other bill. Therefore it is important to get some good lawyer to represent us. The lawyer who has been representing us has recently been called into the Navy, and we shall have to get another one. It is usually our custom to tell the attorney that we have so much money for legal services, to make sure that we shall not be overcharged.

President Griffith: We thank you, Dr. Haywood, for your report. I am sure that we are in good hands in Raleigh.

Do I hear a motion to accept the report?

... A motion to accept the report was offered and seconded and when put to vote was carried.

President Griffith: We shall next have the report of the Committee on Medical Preparedness, of which Dr. Haywood is likewise Chairman, the other members being Dr. Carl V. Reynolds and Dr. Donnell B. Cobb.

Dr. Haywood:

Report of Committee on Medical Preparedness

It is my pleasure to transmit herein my report as Chairman of the Medical Preparedness Committee, which is composed of Drs. Carl V. Reynolds and Donnell B. Cobb, with myself as Chairman.

In the anticipation of some type of war effort by the Society, this committee was formed, and efforts were made to put on some type of military preparedness campaign in every society and section of North Carolina. Speakers were obtained from Fort Bragg and from civil life, who gave generously of their time and their efforts to help prepare us for what is now facing us.

We were attacked at Pearl Harbor on December 7, 1941, and we wasted no time in declaring that a state of war existed between us and our enemies.

On January 27, 1942, I received a letter from the Honorable Paul V. McNutt, Director of the Office of Emergency Management of the Office of Defense Health and Welfare Services for the United States, in Washington. That letter stated:

At a meeting in Washington, D. C., on October 28, 1941, the Procurement and Assignment Service for all physicians, dentists, and veterinarians of the country was organized under the auspices of the Office of Defense Health and Welfare Services. Approval of the establishment of this service was given by the President on October 30, 1941, and the following were appointed:

Dr. Frank H. Lahey, President of the American Medical Association, Chairman

Dr. Harvey B. Stone

Dr. James E. Paullin

Dr. Harold S. Diehl

Dr. C. Willard Camalier

It is planned to have an advisory committee in each corps area to assist this office in the carrying out of its functions. To supplement each corps area committee it is planned to have a state committee in each state. I shall appreciate it if you will serve as chairman of your State Committee.

I accepted this post as a duty which I owed to my country. Since then the duties of the State Preparedness Committee and of the chairmanship of the Procurement and Assignment Committee have definitely merged.

The letter continued:

As Chairman, you will be expected to organize your State Committee and to set up the necessary committees below the State level which will assist you in the determination of the assets of your State with reference to information concerning the availability of physicians in the State who may be asked to volunteer their services elsewhere, in the interest of the national emergency. It is also expected that your Committee will provide the information necessary to avoid the indiscriminate dislocation of practitioners who are in essential capacities.

I think that last more or less covers what Dr. Carrington brought out this evening. That, I believe, is the most difficult part of the whole thing, and it is that which causes more trouble and more heartaches than any other part of the program.

As soon as possible I secured the cooperation of a number of men to act as our State Defense Committee, and through their efforts and through the efforts of this office defense committees have been set up in nearly all of our county societies. The following are the men who have consented to serve on the State Committee:

Dr. Fred M. Patterson, Greensboro

Dr. E. J. Wannamaker, Jr., Charlotte

Dr. Roscoe D. McMillan, Red Springs

Dr. C. V. Reynolds, Raleigh

Dr. W. D. James, Hamlet

Dr. Thomas Leslie Lee, Kinston

Dr. William M. Coppridge, Durham

Dr. Robert P. Noble, Raleigh

Dr. S. Douglas Craig, Winston-Salem

Dr. Charles C. Orr, Asheville

Dr. F. Webb Griffith, Asheville

Dr. Donnell B. Cobb, Goldsboro

Dr. Herbert D. Walker, Elizabeth City

Dr. E. S. Boice, Rocky Mount

Dr. James F. Robertson, Wilmington

Dr. J. R. McCracken, Waynesville

These men on the Committee deserve all that I can say in their praise, because they have responded freely and have given much of their time.

Whenever the Procurement and Assignment Office sent me the name of a physician who might be available for service, his name was forwarded to the committee member who was responsible for organization in that section of the state and also to the chairman of the county defense committee, if there was one (if not, to the chairman of the county society). Through these sources it was determined whether the man was available for service in the armed forces or whether he was essential to his community as a practitioner, surgeon, specialist, health officer in the service of the state, teacher in a medical school, or member of a hospital staff from which he could not be spared.

On April 3, at the request of the Corps Area Chairman, Dr. E. H. Greene, of Atlanta, a letter was sent to the county presidents and to the central committeemen asking for information on every physician living in their territories.

On April 24, 1942, the State Chairmen of the Procurement and Assignment Service were called to Washington for a conference with the Surgeon General of the Army and officials of the War Department and of the Procurement Office. That conference was presided over by Dr. Lahey, President of the American Medical Association, and its purpose was the procurement of 5,000 physicians within the next sixty days. By the end of the year 14,000 physicians will be needed. It is planned to have about 35,000 doctors in the armed forces within the next year. There is a pool of about 156,000 physicians from which to draw the 35,000 needed. It is desired to fill the ranks with men of from 24 to 45, as far as possible.

The list compiled by the American Medical Association showed that 50 per cent of our medical men would go voluntarily. That was the first list that came down from the Procurement and Assignment Office.

It was stated in Washington that 30,000 doctors signed up after Pearl Harbor. It was noted, however, Dr. Lahey said, that the most bloodthirsty group were those from 60 to 80 years of age. The younger group, who are desired, have for one reason or another held back. They were not coming in fast enough or in sufficient numbers, so it was decided that a recruiting campaign had to be set up. To each state of the Union were assigned two officers, one a medical officer and one a line officer. Assigned to North Carolina are Major Roy C. Tatum and Major Carmichael, both native North Carolinians. They are to work with the Procurement and Assignment Service in securing recruits for the Medical Corps; and it is therefore necessary for them to have a complete list of our physicians, giving the age, health, dependents, specialty, and availability for military service of each. Physicians marked available by themselves, by their county boards, or by their district chairmen will be approached by the recruiting officers and asked to apply for commissions and will be aided in secur-

ing immediate examination at the nearest Army station hospital. Commissions up to the rank of captain will be issued immediately.

The whole procedure has been changed. Formerly all commissions had to come through the Adjutant General's office. But under this new plan a man can go to Fort Bragg, even without an appointment, be examined, and practically be commissioned the first day. Men from 24 to 37 years of age will be commissioned as first lieutenants and those from 37 to 45 as captains, in the field. A man with special qualifications, such as having passed some of the special boards or having had other special training, will in all probability, if under 37, obtain a captaincy, I am informed; and those in the older age groups will be given the rank of major. All commissions of major or above will have to come from the Surgeon General's office; they can not be given in the field.

Every physician in the country has been furnished an enrollment form, which he is expected to fill out immediately. July 1 is the final date for the completion of the form.

The *Journal of the American Medical Association*, in its issue of April 25, 1942, lists North Carolina as having sixty-seven component medical societies, twenty-four counties in the state having none. It gives the number of physicians in the state as 2,740, and the membership of our State Medical Society as 1,854. The total for the state includes both white and colored physicians. Colored physicians are being called into the army just as white physicians are, upon the basis of their availability and the need for their services in the community. If the total number of physicians to be in the army by 1943 is to be 28,000, as was first announced, North Carolina's pro rata basis would be something like 520 physicians.*

With our county defense committees this problem arises. Some county committees decided that every man in their territory is essential to the needs of their counties. One county committee stated that they had one doctor for every 7,500 citizens and that every doctor was essential. From an adjoining county, with a slightly larger population and some towns, I think we got about twelve men. I think it is a question of how they evaluate themselves. Certainly the Chairman of the Procurement Committee has no right to go over their heads. It would be like trying to play God. Sometimes men have declared themselves available and we find that their county is practically stripped of medical men.

Information had been obtained on every physician in the State prior to the present emergency, and his status is a matter of record. That list was gone over last fall, during the general preparedness campaign, and each man's qualifications noted. That list was pretty thoroughly canvassed, and that information is in the office of the Fourth Corps Area, in Atlanta.

It is necessary that we complete our lists, and we may have to ask the chairman in each county to complete the information for his county individually.

It is planned to have almost 5,000,000 men under arms by 1943, and there will be about one doctor for every 150 men. This large proportion of doctors is not needed in the camps, but in time of battle the doctors are needed to take care of the casualties and to keep the men in the front line.

The war to date has largely been a series of disastrous defeats for our forces. We shall be called upon to do our share; and it will be our duty

*Ed. note.—On July 3 Dr. Haywood was informed that North Carolina's 1942 quota had been virtually filled.

to our country to furnish our quota. North Carolina has always done its part and her patriotism will not fail.

We ask your cooperation now and also later, when it may be necessary for the Procurement and Assignment Service to help place men in communities which lack medical care. It seems to me that that will be the most troublesome task. All of us are going to be called upon to do things we do not like to do. Those that are left behind will have a heavier burden.

As to the situation after the war, I believe that, as after World War I, the men who serve and come back will not only get their practices back but will have additional practice because of the prestige which they win from having served in the country's armed forces.

Gentlemen, I am glad to do the best I can in this work.

President Griffith: Dr. Haywood has given a tremendous amount of time and effort to this undertaking, to the detriment of his private practice, and we owe him a debt of gratitude. If there is no objection, the report will be accepted.

In 1941 Dr. Paul H. Ringer was elected by the Executive Committee as a trustee of the Hospital Saving Association. That action has never been confirmed, and I should like now to have a motion to make that election official.

Dr. C. F. Strosnider: Mr. President, I move that the election of Dr. Paul H. Ringer as a Trustee of the Hospital Saving Association be confirmed by the House of Delegates and made official.

... This motion was duly seconded and was carried.

President Griffith: Gentlemen, we have with us the Secretary of the South Carolina Medical Association, Dr. Julian P. Price, of Florence, S. C. Dr. Price.

Dr. Julian P. Price, Secretary, South Carolina Medical Association: Mr. President and gentlemen, I am not sure of what the Governor of North Carolina said to the Governor of South Carolina, but I do know what the Secretary of the South Carolina Medical Association should say to the Secretary of your Society—that is, that you have a splendid organization.

We in South Carolina are having the same trouble in supplying doctors for the army that you are having here. It is difficult to decide which ones should go and which ones should stay. I think the main trouble is this: We Southerners are entirely too patriotic. On April 15, in the state of Connecticut, which has a census of 26,000 doctors, 105 had gone into the army; and in South Carolina, which has some 1,400 doctors, 155 had gone into the army. It looks as if we shall have to win the war, from a medical standpoint, unless we can stir up those Northerners.

I appreciate the opportunity of being here.

President Griffith: Thank you, Dr. Price.

We will now have the report of the Board of Nurse Examiners, on which Dr. Thomas C. Johnson, of Lumberton, is the representative of this Society.

Dr. Thomas C. Johnson, Lumberton: Mr. President and gentlemen: As you will note from this report, the number of young women in training to be nurses has increased. I am very glad to see this, as we need more trained nurses.

Report of the State Board of Nurse Examiners

The North Carolina Board of Nurse Examiners has held two examinations for graduate nurses dur-

ing the last year—one in October, 1941, and one in April, 1942.

Following is a report of the examination held on October 28, 29, 30, 1941:

Reported for examinations	401
Re-enrollments of failures from previous examinations	30
Passed successfully	346
Following is a report of the examination held on April 1, 2, 3, 1942:	
Reported for examinations	167
Re-enrollments of failures from previous examinations	48
Passed successfully	153
Registered in recognition of their reg- istration in other states during 12- months' period	100

Total number registered during the year	599
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On January 1, 1942, the total number of students in nursing schools in the state was 1920 as compared with 1812 on January 1, 1941.

President Griffith: Thank you, Dr. Johnson.

Next is the report of the Committee on the Medical Society Foundation, of which Drs. L. C. Skinner, R. L. Pittman, Ross S. McElwee, and John Q. Myers are members. Are any of those gentlemen here?

... No report.

President Griffith: The Committee on Mental Hygiene is next, and Dr. James W. Vernon the Chairman, will present the report.

Dr. James W. Vernon, Morganton:

Report of the Committee on Mental Hygiene

During the year your Committee has endeavored to be mindful of its duties and to grasp some of the opportunities to promote a greater interest in mental hygiene with the medical profession and the people of the state in general. A member of this Committee, the Medical Director of the State Board of Charities and Public Welfare, has been especially active, and we believe with significant success.

The Mental Hygiene Committee this year, as in former years, has recommended that some aspect of psychiatry be discussed at the annual meeting of the State Medical Society, and such subjects are well represented on our program.

Two important societies have been active. The work and program of the Mental Hygiene Society, the President of which was the immediate past President of our Medical Society, Dr. Hubert Haywood, are well known. The North Carolina Neuropsychiatric Association has had three meetings with good programs at different points in the state, and we believe that it is a growing and important organization in its own field.

A letter was sent out by the Committee on January 1, 1942, addressed to the Councilors of the ten districts of this Society, to local county societies, and to certain other individuals in the state who were known to be interested in this subject. This letter pointed out the importance of mental and nervous illness, the increasing economic importance of care and treatment, and especially the importance of mental hazards in connection with our present national emergency and war effort. It was suggested that county and district societies arrange programs once a year centering upon the general field of psychiatry. Specific suggestions were made as to how such programs might be arranged, and how trained and informed speakers might be secured. This letter received a number of favorable responses, including one from Governor Broughton. A few programs have carried a speaker on some subject

of psychiatric interest, and several requests for speakers have been received. In this brief report it is undesirable to give a list of all those who have assisted, but we would like to mention the names of those actually in our armed forces who have attended and participated in meetings concerned with mental health, either under the auspices of the Hygiene Society or on programs of local medical societies. From Fort Bragg: General H. C. Coburn, Jr., Lieutenant Alfred L. Abrams, Captain H. Pooler, Major Norman Q. Brill, and Major J. W. R. Norton (of our own state Society). Navy Lieutenant H. Hewson of Charlotte and Major Elmus D. Peasley of Raleigh, Office of the State Director of Selective Service, have also attended.

The Committee has given some attention to the investigation of the State Hospital at Morganton now being conducted by a Special Committee appointed by the Governor. Your Committee greatly deplores the situation, and especially the injury to the reputation of this important state institution; and it further deplores the disturbance of the confidence of the thousands of citizens of North Carolina whose loved ones are cared for in that hospital. It appears that much well-meant but unwarranted injury has been inflicted upon this good state institution. In 1935 the General Assembly adopted a resolution "authorizing the Governor to appoint a Commission for the study of the insane and mental defectives." This survey was well done by a Commission of five members headed by Dr. Frederic M. Hanes as Chairman, with the assistant of a trained, experienced man, Dr. Lloyd J. Thompson of Yale Institute of Human Relations. If the recommendations carefully presented in this survey had been put into effect promptly by the General Assembly the present unfortunate situation would have been prevented.

Whatever the cause of the present conditions in our State Hospitals, the fact remains that the problem has not been adequately approached by the medical profession as a whole. Mental sickness should be considered almost entirely a medical problem; certainly the guidance and direction of the care of the mentally sick should be dominated by medical men, with little or no political control. Grave mistakes are possible when the inherent nature of mental sickness is not understood. The Committee urges a greater interest by this Society and by the medical profession in the problem of mental illness and the care of the mentally sick in North Carolina. It is suggested that a committee of members of this Society, who have special interest and knowledge of the problems involved, be appointed to cooperate with the Legislative Committee of this Society.

It is hoped that our Medical Society, or certainly more members of the medical profession, may soon take greater interest and become more effectively active in the care and treatment of the mentally sick and in the mental hygiene problems in North Carolina.

President Griffith: We appreciate this excellent report by Dr. Vernon, and I am sure his suggestions will carry weight.

Next comes the report of the Committee on Printing. The Secretary-Treasurer is Chairman of that Committee.

Secretary-Treasurer McMillan, Chairman of the Committee on Printing: Mr. President and the House of Delegates: We have endeavored to carry out the instructions of the Society. I met with one of the members of this Committee, Dr. Wingate M. Johnson, of Winston-Salem, two or three weeks ago. We had our programs printed at the lowest figure we could get, and we have endeavored to do that with all our printing throughout the year.

President Griffith: You have heard the report of Dr. McMillan. What will you do with it? I neglected to call for action upon Dr. Vernon's report, and I ask you to act upon both of them now.

... A motion was offered to accept both reports, which motion was duly seconded and when put to vote was carried.

President Griffith: Next is the report of the Committee on Public Relations—Dr. Ben F. Royal, Chairman, Dr. P. P. McCain, and Dr. H. D. Walker. Is one of those gentlemen present?

... No report.

President Griffith: There is no report, and we will go on to the Committee on Social Security. Dr. Forrest M. Houser is the Chairman, and the Secretary is a member of that Committee. Is there any report?

... No report.

President Griffith: Next is the report of the Committee on Socialized Medicine, Dr. Hamilton W. McKay, Chairman.

Dr. Hamilton W. McKay:

Report of the Committee on Socialized Medicine

In making this report your committee has tried to continue the diligent and thoughtful study carried out by Dr. James W. Vernon and his committee last year. We can reiterate the statement expressed in the first paragraph of his report, that there is still political unrest and social upheaval all over the world; but, in addition, we are brought face to face with the problems of a World War, and with those of chaotic postwar conditions.

The committee would call your attention to:

1. The adverse decisions against the American Medical Association.

2. The many completed experiments in group insurance which have led to such well established nonprofit organizations as the Medical Expense Fund of New York, Inc. and the Massachusetts Medical Service Corp.

3. The twelve experiments throughout the United States on group insurance for farmers, sponsored by the Department of Agriculture in Washington. Recently an attempt to try one of these experiments with the farmers of Alamance County was rejected by the Alamance-Caswell Counties Medical Society.

Without citing specific instances, this committee would emphasize the revolutionary changes which have altered the character of the practice of medicine in the last few years and the rapid changes which are still taking place.

This committee, after careful study and deliberation, feels that the time has arrived for recommendations to be submitted to you and action taken. We therefore submit the following recommendations:

1. That a committee be appointed by the incoming president.

(a) That such a committee, if appointed, be instructed to organize immediately and elect a president, secretary and treasurer.

(b) That this committee be instructed and empowered to negotiate with the proper officers, or boards of directors, of the three insurance companies now approved by the House of Delegates of the Medical Society of the State of North Carolina—namely, Hospital Saving Association, Hospital Care Association, and Medical Service Association. The principal function of such a committee would be to bring about a union of these medically-sponsored insurance companies.

(c) That this committee, if appointed, be empowered to act with the approval of the president and secretary of the North Carolina State Medical Society.

The committee believes that such a union would give the State Medical Society one strong, nonprofit insurance company which would be sponsored by and would receive the support of the entire medical profession of the state and state hospital associations.

The committee further suggests that a careful study be made of the Medical Expense Fund of New York, an insurance company entirely controlled by the medical profession, which pays for medical and surgical treatment rendered in the home, office, or hospital. The ordinary fees are \$2.00 for office visit, \$3.00 for home visit, and \$5.00 for night visit. Surgical fees, x-ray fees, anesthetic fees, and fees for the service of specialists are liberal and are acceptable to the profession.

The chairman of this committee has had correspondence with Dr. I. H. Manning and has also had one conference with him. We have his permission to quote from a recent communication from him:

"I have on my desk copies of fourteen contracts between a certain commercial company and a group of industries around a medium sized town in North Carolina. With one exception, the schedule of fees runs as follows: Hospital, \$2.00 a day, limited to 28 days; Surgery, Class A \$50.00, Class B \$25.00, Class C \$12.00; Obstetrics not covered. The remarkable fact about this is that both doctors and hospitals accept this schedule. The same situation prevails in many other locations. Obviously, Hospital Saving Association cannot compete, as it pays the hospitals \$4.00 and has a maximum surgical fee of \$75.00, and an obstetrical fee of \$25.00. Not infrequently Hospital Saving Association loses out by the advice of some local surgeon who owns a hospital." Dr. Manning asks the question: "What is the sense in the Hospital Saving Association's effort to maintain decent standards in competition with the commercial companies under such conditions?" In concluding the letter he says, "In my opinion, the situation could not be worse."

Respectfully submitted,

Robert Crawford, M.D.

B. O. Edwards, M.D.

Hamilton W. McKay, M.D.

President Griffith: We appreciate the time and effort the Committee has given to this matter. This is an extremely important report, and I should be glad to hear some discussion or suggestions.

Dr. Harry L. Brockmann, High Point: I move that the House of Delegates accept the recommendations as read and that the President be directed to proceed in accordance therewith.

... This motion was duly seconded and was adopted.

President Griffith: We shall now have the report of the Hospital Saving Association by Dr. I. H. Manning, of Chapel Hill.

Dr. I. H. Manning, Chapel Hill:

Report of Hospital Saving Association

At the last meeting, the House of Delegates gave its approval to the addition of surgical and maternal benefits to the program of the Hospital Saving Association. The Association has enrolled for these benefits a total of nearly 14,000 members—5,500 of which are on a cost plus plan—that is, the employer pays the cost, plus an administrative charge. Incidentally, I think this indicates a fine employer-employee relationship and also a gratifying confidence in the conduct of the Association.

It is, perhaps, too early to claim any great success or to draw any conclusions. It was apparent from the beginning that the employers and doctors were more interested than the people. I am making this

report in order to give those who have had experience with this plan an opportunity to criticize its operation and make suggestions. The announcement and the fee schedule were mailed to every member of the Society as listed on the 1941 roster. Perhaps most of them went into the waste basket unopened.

Obviously, the fee schedule is most likely to be the point of attack, for I doubt if it is possible to set up a fee schedule that will satisfy anyone. I wish to point out, however, that many items on the schedule are in our experience so rare that the fee makes very little difference. On the other hand, approximately 75 per cent of our claims for surgical conditions fall within four groups—maternity cases, tonsillectomies, gynecologic operations (largely obstetrical injuries and fibroids) and appendectomies. In a twelve-month period of hospitalization, the Association had in round numbers 2000 maternity claims, 1,600 tonsillectomies, 1,200 appendectomies. You will readily see that the fees for these services may very easily throw the balance sheet entirely out of balance in a very short time.

I cannot report a very great success in meeting the competition of the commercial insurance companies. Perhaps one of the most successful companies offers a basic contract paying a maximum surgical fee of \$50.00 and a hospital per diem rate of \$2.00, without any maternity coverage. Obviously, Hospital Saving Association cannot compete in offering a maximum fee of \$75.00, a per diem rate of \$4.00 and maternity coverage of \$25.00. The employers are not likely to pay any more for a service than they have to, especially as the quality of the service must be the same.

Obviously, the commercial companies cannot sell such contracts without the tacit approval of the surgeons and the hospital managements. The usual reason given is that "such contracts are better than nothing". Perhaps the local situations may justify such a position, but one may hazard the prediction that the fees everywhere will be very soon adjusted to these standards and the commercial companies will control the market. I may also suggest that the Industrial Commission is not likely to continue to pay more than the market price.

I am very strongly of the opinion that the Medical Society should set up a minimum fee schedule and go on record as disapproving any organization—commercial or otherwise—offering a lower schedule. I am very well aware that the Society cannot bind the individual members to any schedule of fees, but such a resolution would strengthen the hand of those who wish to maintain a respectable standard.

The Association has now paid hospital claims in the total amount of something over two million dollars, and is prepared to increase its payments by approximately 5 per cent or about \$30,000 a year if an equitable and acceptable way can be found. The surplus really belongs to the members, and the Association is under the obligation to see that the members receive a reasonable benefit. The membership is now nearly 175,000.

Diagnostic Study of Hospital Admissions—1941

	Regular	Cost Plus
Maternity	17.54%	23.64%
Diseases of Women..	6.10%	7.00%
Tonsillectomies	12.07%	13.34%
Appendectomies	9.48%	7.80%
Influenza	7.12%	1.16%
Respiratory Diseases	7.51%	5.00%
Genito-		6.16%
Urinary Diseases..	5.99%	6.11%
Circulatory Diseases	5.09%	4.21%
Gastro- Intestinal		
Diseases	7.01%	6.39%
Tumors	2.72%	3.96%
Thyroid Diseases	0.90%	0.79%

Female Adults—57% of adult members. Average cost per year \$6.224.

Male Adults—43% of adult members. Average cost per year \$2.845.

Juvenile Members—Average cost per year \$1.399.

President Griffith: We are very glad to have this report of Dr. Manning's. His long experience in this line of work qualifies him to speak with authority, and anything he says should carry great weight. Do I hear a motion to accept the report?

... On motion, the report was accepted.

President Griffith: The next report is that from the Committee on Syphilis Control, of which Dr. J. C. Knox, of Raleigh, is Chairman, the other members being Dr. Hamilton W. McKay and Dr. J. Roy Hege. Dr. McKay, we shall be glad to hear from you.

Dr. Hamilton W. McKay, Charlotte: Mr. President, we have not been able to have a meeting any time recently.

President Griffith: There is no report, then. Next is the Committee on Tuberculosis—Dr. S. M. Bittinger, of Black Mountain, Chairman. The other members are Dr. P. A. Yoder and Dr. Charles C. Orr. Is any one of those here?

... No report.

President Griffith: I ask Dr. McMillan to report for the Committee on Scientific Work.

Secretary-Treasurer McMillan: I have no formal report to make, Mr. President. Your program is here, and the scientific exhibits are upstairs. Other than that I have nothing to say.

President Griffith: There is one more report, but that is to be made by Dr. W. H. Smith, for the Committee on Postgraduate Medical Study. Dr. Smith is not here, being in attendance on a meeting of the Nominating Committee, so we will have that report filed.

Report of the Committee on Postgraduate Instruction

Postgraduate instruction has been carried on in the state during the past year by the University of North Carolina, the Duke Medical School and the State Board of Health.

The three agencies named above have cooperated with the United States Children's Bureau in giving weekly postgraduate courses in obstetrics and pediatrics at Duke Hospital. These courses are limited to six physicians in a class and will be given if only three physicians are enrolled. The course starts each Monday morning at 8:30 and continues through 5 p. m. Friday. There is no tuition, and if a physician remains throughout the course, free room and free meals are provided.

From the first day of May, 1941, to April 18, 1942, one hundred and one white physicians have availed themselves of this excellent opportunity. The same course was given for Negro physicians at Lincoln Hospital in Durham, and fifteen physicians availed themselves of this opportunity. This course is still going on, and will be continued as long as there are sufficient applicants for the course. Dr. A. W. Makepeace is the instructor in obstetrics and Dr. Robert B. Lawson is the instructor in pediatrics. Application for this course should be made to Dr. G. M. Cooper, State Board of Health, Raleigh, N. C.

In addition to this course, Duke Medical School on October 16-18, 1941, held a Postgraduate Symposium on the problems of civil and military emergencies. This Symposium was very well attended and was very timely in helping to meet the problems of civil and military life that we are facing today.

The Duke Medical School still offers instruction in the Duke Hospital to any physician, without any

cost except for the room and board. This is an excellent opportunity to receive individual instruction at the operating table, at the bedside and in the autopsy room.

The University of North Carolina, in addition to cooperating in the course in obstetrics and pediatrics outlined above, has during the past year sponsored, and with the help of the local profession put on six postgraduate courses in the state. These courses have been given at Kinston, Fayetteville, Salisbury, Gastonia, Durham and Raleigh.

The total number of physicians enrolled for these six courses was 321, and they covered forty counties.

The State Board of Health has cooperated in the work in obstetrics and pediatrics.

The Bowman Gray School of Medicine, in addition to continuing its fine work in cancer prevention, has held symposiums during the year and has invited the physicians to attend these. Among the speakers was Dr. Sidney Burwell, Dean of the Harvard School of Medicine, who spoke on "Constrictive Pericarditis." Dr. W. G. Harrison of Birmingham, Alabama, gave a series of lectures during the week of November 23 dealing with various phases of Classical Medicine. Postgraduate courses for Negro physicians in Medicine, Obstetrics and Surgery were given by the faculty from January 21 to April 24.

Wm. H. Smith, Chairman.

President Griffith: The business has been concluded, gentlemen, and we now stand adjourned.

... Thereupon, at 10:30 p. m., the House of Delegates adjourned.

WEDNESDAY MORNING SESSION

May 13, 1942

The House of Delegates held its final session in the Sunday-School auditorium, First Methodist Church, and was called to order by President Griffith at 10:15 a. m.

President Griffith: The first thing on the program this morning is the report of the committee appointed at the first meeting of the House of Delegates to pass on the President's Message to the House of Delegates and on his Address to the general session. Dr. Ivey will make the report.

Dr. H. B. Ivey, Goldsboro: Gentlemen, two of the President's recommendations were written in long hand, and we did not have those at the time of formulating the report. The other members of the Committee are now away, and I should like to make a minority report upon these two recommendations.

I recommend to the House of Delegates the adoption of the President's recommendation that Dr. Fred W. Rankin, of Lexington, Ky., be made an Honorary Member of this Society.

The second recommendation in the President's handwriting was that there be presented to the Governor of North Carolina a summary of the facts in regard to the relations between the North Carolina Industrial Commission and the State Medical Society, with a request to the Governor to make such changes as he deems necessary to correct the intolerable condition now existing. Acting in the absence of the other two members of my Committee, I wish to recommend that this course of action be followed. I feel sure that the other members would concur if they were here, but since they are gone I present that as a minority report.

I now present the report of the full Committee.

Report of the Committee on the Address of the President

The address of the President, Dr. F. Webb Griffith, before the Medical Society of the State of North Carolina on "The Doctor and the Emergency" was

most inspiring, and we trust that it will be given as wide publicity as possible. It should be read by the general public as well as by every doctor in the state. It will give the public a much better understanding of the vital and patriotic service the profession is rendering in our country and will tell them how to make the best use of the doctors who are left behind for civilian service.

Dr. Griffith calls attention to the danger that is confronting the Hospital Saving Association from impending legislation in Washington. We feel that the accomplishments of this Association are among the most significant contributions of our profession to the welfare of the state, and we recommend that the House of Delegates pass a resolution setting forth our objections to the pending legislation and that a copy of the resolution be sent to each of our Senators and Congressmen.

The President calls attention to the need of revision of our Constitution and By-Laws, and we feel that his recommendation that the incoming President appoint a committee to study and revise the Constitution and By-Laws should be adopted.

We also heartily endorse his recommendation that those physicians who remain at home do all in their power to safeguard the interests of their colleagues in the service and that they aid them in getting re-established upon their return.

As recommended by the President, we also advise that the Secretary-Treasurer's books be audited April 15 instead of in December, so that his books shall be up to date at the time of the annual meeting.

Respectfully submitted,

P. P. McCain, M. D.

C. R. Hedrick, M. D.

H. B. Ivey, M. D.

President Griffith: Do I hear a motion?

Dr. G. W. Mitchell, Wilson: In regard to this minority report, it looks as if we have had one of the best committees working on these Industrial Commission matters that it is possible for us to have, in Dr. Elliott and his co-workers. I should like to add to the recommendation that the incoming President continue Dr. Elliott as chairman of the committee and appoint such other members as he sees fit. I feel that Dr. Elliott, after spending the time on this work that he has given to it, is really in better position to go forward with it than anybody else we can have, because a new person in that position would lose a lot of valuable time. I offer that amendment to the resolution, that Dr. Elliott be continued as chairman of this committee.

Secretary-Treasurer McMillan: I suggest to Dr. Mitchell that he say "a committee" instead of "this committee".

Dr. Mitchell: "A committee" is all right.

President Griffith: Is there a second to the amendment?

A Member: I second it.

Dr. Ivey: I will accept the amendment, Mr. President.

President Griffith: The minority report, as amended, is before you, gentlemen. What will you do with it?

... On motion, duly seconded, the minority report was adopted.

President Griffith: Do I hear a motion to adopt the report of the Committee as a whole?

Dr. Mitchell: I move that we accept the report of the Committee, Mr. President.

Dr. John Q. Myers: I second the motion.

... The motion, being put to vote, was carried unanimously.

President Griffith: The next item is the report of the Nominating Committee, and we will hear from Dr. Sparrow.

Dr. Thomas D. Sparrow, Charlotte:

Report of Nominating Committee

The Nominating Committee elected by the House of Delegates submits the following report:

For President-Elect of the Medical Society of the State of North Carolina: Dr. James William Vernon, of Morganton.

For First Vice President: Dr. George S. Coleman, Raleigh.

For Second Vice President: Dr. Julian A. Moore, Asheville.

As Delegates to the American Medical Association we recommend that Dr. Ross S. McElwee of Statesville, and Dr. W. T. Rainey of Fayetteville, succeed themselves.

As Delegates to the Medical Society of Virginia:

Dr. Newson P. Battle, Rocky Mount

Dr. S. M. Bittinger, Black Mountain

Dr. B. E. Rhudy, Greensboro

Dr. John C. Tayloe, Washington

As Delegates to the South Carolina Medical Association:

Dr. W. D. James, Hamlet

Dr. T. D. Sparrow, Charlotte

Dr. D. M. McIntosh, Old Fort

For two members of the Board of Trustees of the Hospital Saving Association:

Dr. I. H. Manning, Chapel Hill

Dr. Harry L. Brockmann, High Point

We recommend the confirming of the appointment

of Dr. Paul H. Ringer, of Asheville, as a member of the Board of Trustees of the Hospital Saving Association.

The Society received invitations for its 1943 meeting from Pinehurst, Winston-Salem, and Raleigh. The Committee felt that it is most important, for the coming year, to select a centrally located city which is easily accessible by rail and by bus. We recommend that the 1943 meeting be held in Raleigh, North Carolina.

Chairman, Nominating Committee.
THOS. D. SPARROW, M.D.

President Griffith: The report is before you, gentlemen.

Dr. J. A. Elliott, Charlotte: Inasmuch as we are not sure what the status may be next year, I move you that the time and place of the meeting be left to the Executive Committee and that the Executive Committee be polled on this matter by mail.

President Griffith: Is there a second to the motion to amend the report?

Dr. John Q. Myers, Charlotte: I second it.

President Griffith: The question is now on the report of the Nominating Committee, as amended.

... The amended report was adopted unanimously.

President Griffith: Is there any further business to come up? None appearing, I declare the Eighty-Ninth Annual Session of the House of Delegates adjourned sine die.

... Whereupon, at 11:30 a. m., Wednesday, May 13, 1942, the Eighty-Ninth Annual Session of the House of Delegates adjourned sine die.

GENERAL SESSIONS

FIRST GENERAL SESSION

Tuesday Morning, May 12, 1942

The first general meeting of the Eighty-Ninth Annual Session of the Medical Society of the State of North Carolina convened at 9:30 a. m. on Tuesday, May 12, 1942, in the ballroom of the Hotel Charlotte, with the Secretary-Treasurer, Dr. Roscoe McMillan, presiding.

* * * * *

Secretary-Treasurer McMillan: The Eighty-Ninth Annual Session of the Medical Society of the State of North Carolina will please come to order.

I will ask you to stand, and Bishop Purcell of Charlotte will deliver the Invocation.

... Bishop Purcell then gave the invocation.

Secretary-Treasurer McMillan: It is my pleasure to recognize Dr. Edward J. Wannamaker, President of the Mecklenburg County Medical Society.

Dr. Edward J. Wannamaker (Charlotte): Mr. Chairman and Members of the Association: The doctors of Mecklenburg County consider it a distinct honor and privilege to have you meet in Charlotte, and we hope you will call on us if there is any way in which we can add to your pleasure. We hope your visit will be enjoyable as well as scientifically profitable.

Secretary-Treasurer McMillan: This meeting could not have been a success except for the fact that the members of the Mecklenburg County Medical Society have spent many hours and days in making plans. Thanks are due to the General Chairman of the Arrangement Committee, Dr. Joseph A. Elliott, and his co-workers. We will recognize Dr. Elliott.

Dr. Joseph A. Elliott (Charlotte): Mr. Chairman and Gentlemen: I wish to endorse the welcome which Dr. Edward J. Wannamaker has extended to you.

... Dr. Elliott then made some announcements about features of the program.

Secretary-Treasurer McMillan: Ladies and gentlemen, it is my privilege and very great pleasure to present to you the President of the Medical Society of the State of North Carolina, Dr. F. Webb Griffith of Asheville.

President Griffith: Mr. Secretary, fellow members, and most welcome guests: I have chosen for my brief talk this morning "The Doctor and the Emergency".

... President Griffith then read his prepared paper, which was published in the June issue of the North Carolina Medical Journal.

Secretary-Treasurer McMillan: The House of Delegates has appointed a Committee to study this address and make its recommendation at the meeting of the House of Delegates tomorrow morning. Dr. Paul P. McCain is Chairman. I should like to recognize now the President-Elect, Dr. Donnell B. Cobb.

Dr. Donnell B. Cobb: Mr. Secretary, ladies and gentlemen: No president during my memory has given more wholly and unselfishly of himself to the North Carolina Medical Society than has Dr. Griffith. Fortunately for us, he has been able to devote a large part of his time to the duties of his office. He has traveled from one end of the State to the other, meeting with us and advising us wisely, and always in the interest of the profession. The interests of this Society have been foremost in his thoughts and in his action. During this past year, he has guarded our ramparts well.

We know Dr. Griffith as an outstanding surgeon, one who is recognized naturally by his own achievements. We recognize him as our able and esteemed leader whom we have been proud to follow. But, we like him best as the man he is, our friend, Webb Griffith.

Dr. Griffith, the doctors of North Carolina have given me the great honor and real personal pleasure to present to you this gift, the jewel, as an expression of gratitude for what you have done for us and as a token of the affection and esteem which we have for you. May you live happily ever after!

President Griffith: Dr. Cobb, I appreciate very deeply the kind words you have said, but I am keenly aware how little I deserve them. I shall preserve this jewel as a constant reminder of my obligation to the State of North Carolina and to organized medicine, and I shall always hold it as one of my most valuable and precious possessions.

Secretary-Treasurer McMillan: I recognize Dr. Hubert A. Royster, Chairman of the Committee on Award of the Moore County Medal.

Dr. Hubert A. Royster (Raleigh): By the generosity and foresight of the Moore County Medical Society, there is presented every year a medal for the most excellent paper prepared for any one of the sections. It is provided by the rules that the Chairman of each section appoint a committee to decide on the best paper presented at that section. These papers are then read by a Committee appointed by the President of the State Medical Society, which selects the one to receive the Moore County award.

This year, my colleagues on the Committee, Dr. Blue and Dr. Coker, and I beg to report a unanimous decision. The medal this year goes to Dr. Walter R. Johnson of Asheville, for his paper entitled "Is Diverticulitis of the Colon a Surgical Disease?"

I am going to ask Dr. R. G. Rosser, Secretary of the Medical Society of Moore County, to present the medal.

Dr. R. G. Rosser (Vass): It gives me great pleasure to present Dr. Johnson with the Moore County Medal.

President Griffith: One of our outstanding invited guests today is a Colonel in the United States Army, President-Elect of the American Medical Association, Dr. Fred W. Rankin.

... Dr. Rankin then addressed the Society on the subject, "The Doctor in War-Time".

President Griffith: Dr. Rankin, we are honored to have you here today. We thank you for the time you have given us and the message that you have brought. This is your home society and we want you to know you are always welcome.

Secretary-Treasurer McMillan: Mr. President, in the absence of the Chairman or any members of the Obituary Committee, I am going to read the names of the doctors who have died since we last met.

Dr. Moses Y. Allen	Mt. Airy
Dr. Walter O. Allen	Hendersonville
Dr. B. L. Ashworth	Marion
Dr. W. E. Baker	Arden
Dr. William E. Braswell	Sandy Ridge
Dr. J. F. Brown	Fairmont
Dr. Thomas C. Bullock	Autryville
Dr. Wade H. Bynum	Germantown
Dr. C. DeW. Colby	Asheville
Dr. R. L. Daniels	New Bern
Dr. Ira M. Fisher	Oriental
Dr. G. L. Fuquay	Coats
Dr. William Earle Grady	Tryon
Dr. Fred Lee Herbert	Andrews
Dr. H. B. Hiatt	Oldsmar, Florida

Dr. C. C. Hudson	Greensboro
Dr. W. Myers Hunter	Charlotte
Dr. Charles B. Ingram	Mt. Gilead
Dr. C. W. Jennings	Greensboro
Dr. B. C. Johnson	Bunn
Dr. Carl White Jones	High Point
Dr. Robert Randolph Jones, Jr.	Durham
Dr. Claudius C. Joyner	Farmville
Dr. William Bernard Kinlaw	Rocky Mount
Dr. William P. Knight	Greensboro
Dr. Rowland McN. Lancaster	Rural Hall
Dr. Benjamin J. McGoogan	Morven
Dr. Charles W. Mosely	Greensboro
Dr. Joseph E. Nobles	Greenville
Dr. Henry Norris	Waverly Mills, S. C.
Dr. F. J. Pate	Greensboro
Dr. J. C. Ray	Whitakers
Dr. George H. Ross	Durham
Dr. Thomas A. Smith	Charlotte
Dr. W. G. Smith	Wendell
Dr. Robert M. West	Salisbury
Dr. William Moore White	Asheville
Dr. John William Wilkins	Mount Olive
Dr. William E. Wishart	Charlotte

I am going to ask the audience to stand in a moment of silent prayer.

... The audience stood in silence.

Dr. Thomas Sparrow: We have the privilege of listening to Brigadier-General Henry C. Coburn, Commanding Medical Officer, Fort Bragg, on the subject "The Responsibility of the Civilian Physician in the War Emergency".

... Brigadier-General Coburn then read his prepared paper, which was published in the June issue of the North Carolina Medical Journal.

Dr. Thomas Sparrow (Charlotte): We have the honor now of hearing from Major Roy C. Tatum.

Major Roy C. Tatum (Fort Bragg): Mr. President and Members of the North Carolina Medical Society, ladies and gentlemen:

The biggest reason for my being on the program today is to let you see your North Carolina Medical Officer Recruiting Board, which is composed of Major Carmichael, representing the Adjutant General and myself, representing the Surgeon-General.

The Procurement and Assignment Service has been decentralized to the different states. One committee in each state is to be called the Medical Officer Recruiting Board, whose responsibility it is to get the list of available doctors from the State Chairman of the Procurement and Assignment Agency and to offer those doctors commissions suitable to their age and experience. We are prepared to issue a commission within twenty-four hours after a physician applies for it. We are located at Fort Bragg in the station hospital No. 1, and we are operating seven days a week and as many hours as are necessary, interviewing the doctors, getting the papers ready, and swearing them in for active duty.

This Medical Officer Recruiting Board is here for your service and your convenience. We ask your cooperation and we are going to give you ours. We want young men under 37 as soon as possible. We have a program to procure from North Carolina between now and June 30, three hundred members of this Association.

I thank you, Mr. President.

Dr. Thomas Sparrow: Gentlemen: The next paper on the program is from the Section on Pediatrics. The speaker is Dr. Jasper S. Hunt of Charlotte, and his subject, "Pediatrics, a Changing Specialty".

... Dr. Hunt then read his prepared paper, following which the meeting adjourned.

SECOND GENERAL SESSION

Wednesday, May 13, 1942

The second general session was called to order by Dr. F. Webb Griffith, President of the Medical Society of the State of North Carolina, at 2 p.m.

President Griffith: The first paper before the Second General Session is by Dr. V. M. Hicks of Raleigh, on "The Problem of the Blind and Visually Handicapped in North Carolina".

... Dr. Hicks then read his prepared paper.

President Griffith: Dr. Hicks, we appreciate the message you have brought us. You and your associates are doing a wonderful work.

Our next paper is the "Surgical Treatment of Cancer of the Lung," by Dr. H. H. Bradshaw of Winston-Salem.

... Dr. Bradshaw then read his prepared paper.

President Griffith: Dr. Bradshaw we are indebted to you for a most instructive talk. North Carolina is very fortunate indeed to have a man of your caliber come into our state, and we wish you well.

The next paper is "A Study in Contraception. Report of Birth Control Clinic, Two Years' Operation," by Dr. Irma Henderson-Smathers.

... Dr. Henderson-Smathers then read her prepared paper.

President Griffith: Dr. Henderson, we are greatly indebted to you for this excellent paper you have brought us on an interesting subject. Those of us in Asheville who have watched your work and know the high plane on which you are keeping it, do not hesitate to give you our unqualified endorsement, and we are proud of what you are doing.

The next paper is "Roentgenology as an Aid to the Obstetrician," by Dr. Oren Moore.

... Dr. Oren Moore, assisted by Dr. Tugwell, then presented his paper.

President Griffith: Dr. Moore, we want to thank you for your most illuminating talk.

I am going to ask Dr. William Allan, former President of the Society, to introduce our guest speaker.

Dr. William Allan (Charlotte): The speaker who follows, after cleaning up the last war with the help of Unit "O" from this town, has since become the number 1 heart man of this country. It is with great pleasure that I introduce to you Dr. Paul Dudley White of Boston.

... Dr. White then addressed the Society on "Recent Advances in Cardiovascular Diagnosis and Treatment". This paper was published in the July issue of the North Carolina Medical Journal.

President Griffith: We thank you for the time you have taken and the trouble which you have gone to to be with us today. There is no physician in this country who ranks higher in the estimation of the profession of North Carolina than you. We have looked forward to your talk as a highlight of our meeting and we have not been disappointed.

Gentlemen, we have one more paper on the program for this afternoon—"The Pathologic Physiology of Certain Gastro-Intestinal Complaints," by Dr. Paul F. Whitaker of Kinston.

... Dr. Whitaker then read his prepared paper.

President Griffith: Dr. Whitaker, we have enjoyed your excellent and timely paper, and we thank you.

Gentlemen, this ends the Second General Session. We will go immediately into the Third General Session, without any delay.

... The second general session was then adjourned.

THIRD GENERAL SESSION

Wednesday, May 13, 1942

... The Third General Session convened at 5 p.m., with President Griffith presiding.

President Griffith: The Third General Session will please come to order, and we will have the report of the House of Delegates by Dr. McMillan.

... Secretary-Treasurer McMillan then read the report of the House of Delegates, which upon motion duly made and seconded was unanimously carried.

President Griffith: Is there any unfinished business?

Secretary-Treasurer McMillan: None, Mr. President.

President Griffith: Is there any new business to come up?

Dr. Karl Schaffle (Asheville): I wish to present a resolution, Mr. President, which is sponsored by the Buncombe County Medical Society.

President Griffith: Will you read it, Dr. Schaffle?

Dr. Schaffle: Yes, sir. It is as follows:

Resolution Concerning Society Members Serving with the Armed Forces of the United States

Whereas, many members of the Medical Society of the State of North Carolina are or soon will be serving with the armed forces of the United States; and

Whereas, such service with the armed forces entails great sacrifices in income and in loss of practice which is unavoidable; and

Whereas, there is becoming evident a trend, which will no doubt become much more acute, for physicians out of the state to try to move into North Carolina to establish themselves at the expense of those members who are serving with the armed forces; and

Whereas, these doctors are in many instances aliens, graduates of unaccredited schools, those who are attempting to evade military service, and even some who under ordinary circumstances would be acceptable; and

Whereas, the advent of any number of outside physicians into the state during this critical period would seriously impair the prospects of those serving with the armed forces of returning to their previous situations; and in view of the fact that there is a national shortage of physicians:

Be it therefore resolved:

First, that the Medical Society of the State of North Carolina does declare itself determined to protect as far as possible the practices, the hospital positions, and other professional interests of its members during their period of service with the armed forces of the United States;

Second, that it does hereby instruct the district and county societies in the state of North Carolina to make every effort to protect the professional interests of their members;

Third, that the hospitals and all other institutions employing physicians in a professional capacity be urged to maintain such positions for those who are called to the colors;

Fourth, that the North Carolina Board of Medical Examiners be urged to use extreme caution in issuing licenses and to do all possible to protect the interests of the members of this Society who are serving with the armed forces; and

Fifth, that the Secretary be instructed to convey the information herein contained to the various district and county societies, the officers of the North Carolina Hospital Association, the North Carolina Board of Medical Examiners, and other interested persons.

This resolution is sponsored and introduced at the

request of the Buncombe County Medical Society.

(Signed) G. W. Murphy, M.D., President.

President Griffith: Do you make a motion to adopt that, Dr. Schaffle?

Dr. Schaffle: Yes, sir, I do.

... The motion was duly seconded and unanimously carried.

President Griffith: Is there any other new business? There being none, at this time we shall have the installation of the incoming President, Dr. Donnell B. Cobb. I ask his father, Dr. W. H. Cobb, to escort him to the chair.

... The President-Elect was escorted to the chair.

President Griffith: Dr. Cobb, I know of no one in the Society in whom at this time we can have more confidence than in you. Your excellent training, your devotion to the Society, and your own fine intrinsic qualities eminently fit you for the position of President of this organization. I take great pleasure in presenting you with this gavel.

Dr. Donnell B. Cobb: Dr. Griffith, I thank you for those very kind but undeserved words.

... Dr. Cobb gave his inaugural address, which was published in the June issue of the *North Carolina Medical Journal*.

President Cobb: At this time I should like to recognize my friend and our President-Elect, Dr. James William Vernon, of Morganton.

Dr. James W. Vernon, President-Elect: Mr. President, for a long time I have wondered why all remarks such as I am about to try to make, in response to high opportunity and important position, in expressing some word of gratitude, should begin with "Words are inadequate to express my appreciation." I have wondered why people did not change that little talk. But now I know why, on occasions like this, it is said that words are inadequate. Many times today, when my friends have kindly walked up to me and congratulated me, I imagine they have noticed that I did not say anything. That was because I could not think of anything to say. I do want to tell you now that I am deeply grateful to you for this honor and this expression of confidence.

It was a wise provision adopted by this Society several years ago to give a whole year to a president-elect to learn his job. Fortunate for me especially it is that I shall have that year to fortify my courage and acquire much information that I shall need to serve you. It is fortunate, too, that I am to sit at the feet of our new President and to drink from the fountain of knowledge embodied in Dr. Donnell Cobb. To look at him gives me strength and assurance. I am not sure that I gather all that assurance from Donnell; I rather imagine a great deal of it comes from the fact that I know his father, who is loved by us all. And so if the beloved Dr. William H. Cobb of Goldsboro will continue to guide his son Donnell, and if Donnell will instruct me and guide me, perhaps in a year I may acquire a little information and be better able to serve you.

I thank you.

President Cobb: I think our Secretary has an announcement to make.

Secretary-Treasurer McMillan: I just want to take this opportunity, Mr. President, before we leave, of thanking the Charlotte physicians and their wives for the wonderful entertainment they have given us at this session of the Medical Society.

President Cobb: I am sure that Roscoe McMillan voices the feeling of all of us toward our hosts in Charlotte.

Is there anything further to come up?

President-Elect Vernon: Someone asked me to introduce a motion that the President appoint a committee or designate an agency to which physicians might send old instruments or used instruments which could be sent on for some useful purpose. I was told that many doctors have instruments which they would be willing to part with at this time if they felt that they would be forwarded for some useful purpose. I move you, Mr. President, that you appoint a committee or designate some agency to receive instruments which doctors may give to be used in the great emergency before us.

... This motion was seconded and, when put to vote, was unanimously carried.

President Cobb: Is there any further business?

Having reached the end of our business and the end of our program, I now declare the Eighty-Ninth Annual Session of the Medical Society of the State of North Carolina adjourned sine die.

... Whereupon the Society adjourned, at 5:15 p.m.

CONJOINT SESSION

of the

MEDICAL SOCIETY OF THE STATE OF
NORTH CAROLINA

and the

NORTH CAROLINA STATE BOARD OF HEALTH
Wednesday, May 13, 1942

The Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health was held in the ballroom of the Hotel Charlotte on Wednesday, May 13, 1942, immediately following the adjournment of the Section on General Practice of Medicine and Surgery. Dr. S. D. Craig of Winston-Salem, President of the State Board of Health, presided.

President Craig: The Conjoint Session will come to order, and Dr. Carl V. Reynolds, Secretary of the State Board of Health and State Health Officer, will make his report.

... Dr. Reynolds read his prepared report and filed the departmental reports.

President Craig: Dr. Reynolds, we thank you for your thorough and painstaking report.

Is there any discussion gentlemen?

There is no discussion, and I believe there is no further business to come up at this time. I therefore declare the Conjoint Session adjourned.

... The Conjoint Session of the State Medical Society and the State Board of Health thereupon adjourned.

ALPHABETICAL LIST OF FELLOWS FOR 1942 WITH POSTOFFICE ADDRESSES

Name	Address	Name	Address	Name	Address
Honorary Members					
Paul V. Anderson, M.D.	Richmond, Va.	*Avery, E. S., I.	Winston-Salem	Bennett, W. L.	Burnsville
Wm. Seaman Bainbridge, M.D.	New York, N. Y.	Aycock, F. M., GP	Princeton	*Bentley, J. Gordon,	Pores Knob
James K. Hall, M.D.	Richmond, Va.	Aydlett, H. T.,	Greensboro	GP	Chapel Hill
Stuart McGuire, M.D.	Richmond, Va.	(Hon.), GP	Greensboro	*Berryhill, W. R., I.	Best, D. E.
R. L. Payne, Jr., M.D.	Norfolk, Va.	Aydlette, Joseph P. (Hon.)	Clinton	Best, G. E., GP	Clinton
*Fred W. Rankin, M.D.	Lexington, Ky.	Ayers, J. S., GP	Bryson City	(Hon.) GP	Wilson
Milton J. Rosenau, M.D.	Chapel Hill, N. C.	Bacon, Harold Lyle	Asheville	Biggs, M. H.	Rutherfordton
William Sharpe, M.D.	New York, N. Y.	Baier, Geo. F., Jr., GP	Elizabeth City	(Hon.), S	Albemarle
Fellows and Honorary Fellows					
Adair, W. E.	Erwin	Bailey, R. L., Jr.	Winston-Salem	*Billings, G. M., ALR	Morganton
*Adams, Carlton N., ObG,	Winston-Salem	Bain, E. A.	Gastonia	Bitting, Numa Duncan	Durham
*Adams, James R., Pd.	Charlotte	Baker, Horace M., S	Lumberton	(Hon.), S	Durham
Ader, O. L., GP	Walkertown	Baker, Lenox D., OrS	Durham	*Bittering, S. M.,	Black Mountain
*Albright, Sam	Belmont	Baker, R. D., Path.	Charlotte	Tb	Goldsboro
*Alexander, G. T.	Thomasville	*Baker, T. W.	Lincolnton	*Bizzell, M. E.	Goldsboro
*Alexander, J. M., GP	Charlotte	Bandy, W. G., GP	Lincolnton	Bizzell, T. Malcolm	Goldsboro
Alexander, James R. (Hon.)	Charlotte	*Banner, Chas. W.	Greensboro	*Black, Geo. Wm.	Charlotte
*Allan, William (Hon.), I	Charlotte	(Hon.), ALR	Greensboro	*Black, O. R.	Landis
*Allen, Charles I., S	Wadesboro	Bardin, R. M.,	Roanoke Rapids	Blackshear, T. J. OALR	Wilson
*Allen, G. C., GP	Lumberton	GP	Roanoke Rapids	*Blackwelder, Verne H., S	Lenoir
*Allen, Jos. A. (Hon.) GP	New London	*Barefoot, Graham B.,	Wilmington	Blair, Andrew, I.	Charlotte
*Allen, M. H., GP	Cramerton	I, Path., R.	Wilmington	*Blair, J. L., GP	Gastonia
Allgood, R. A., GP	Fayetteville	*Barefoot, W. F.,	Wilmington	Blair, J. Samuel	Gastonia
Alyea, Edwin P., U	Durham	S, GP	Wilmington	Blair, M. P.	Marshville
*Anders, McT. G. (Hon.) GP	Gastonia	*Barham, B. Francis	Mayodan	(Hon.) GP	Hobbsville
Anderson, C. A. (Hon.)	Burlington	Barkwell, J. H.	Weeksville	*Blanchard, T. W.	Lexington
Anderson, E. C., GP	Wilmington	Barnes, Dempsey	Asheboro	Blowe, R. B., GP	Weldon
*Anderson, R. S., S	Rocky Mount	*Barnes, H. E.	Hickory	Blue, A. McN.	Carthage
Anderson, W. B., OALR	Durham	Barnes, Tiffany	Asheboro	Blue, Waylon, GP	Jonesboro
Anderson, Wade H. (Hon.), PH,	Wilson	Barnhardt, A. E.	Kannapolis	Boice, E. S., S	Rocky Mount
*Andrew, John M.	Lexington	Barrett, J. M., GP	Greenville	*Bolt, C. A., GP	Marshville
*Andrew, Lacey Allen, Jr., U,	Winston-Salem	*Barrier, H. W.	Concord	Boney, Elwood R.	Kinston
Andrews, F. N.	Waxhaw	*Barron, A. A.,	Charlotte	Bonner, J. B., GP	Aurora
Angel, Edgar S.	Franklin	(Hon.), I	Charlotte	Bonner, John H.	Elizabeth City
Angel, Furman	Franklin	*Basnight, Thomas G.	Stokes	(Hon.), Pd	Morehead City
Anthony, J. E.	Kings Mountain	(Hon.), GP	Stokes	*Bonner, M. D., Tb	Jamestown
(Hon.)	Gastonia	Bass, H. Hartwell	Henderson	*Bonner, O. B., OALR	High Point
Anthony, W. A.	Gastonia	Bass, S. P. (Hon.)	Tarboro	Boone, W. H.	Durham
*Apple, E. D.	Greensboro	Battle, Margaret White,	Rocky Mount	(Hon.) GP	Durham
Archer, Isaac J.	Black Mountain	Ob	Rocky Mount	Boone, W. W., GP	Durham
(Hon.) Tb	Durham	*Battle, N. P., S	Washington	*Bost, T. C., S	Charlotte
*Arena, J. M., Pd	Durham	Baxley, R. D.	Charlotte	*Bostic, W. C., Jr.	Forest City
Armentrout, Charles H.	Asheville	*Baxter, O. D.	Durham	(Hon.)	Forest City
*Armstrong, C. W.	Salisbury	Baylin, George Jay	Elkin	*Bowen, J. P., S	Aberdeen
Ashby, E. C., S	Mt. Airy	*Beale, Seth M.	Elkin	GP	Winston-Salem
Ashby, J. W., Psy	Raleigh	*Beall, L. G. (Hon.)	Black Mountain	Bowles, Francis N.,	Durham
*Ashe, J. R.	Charlotte	NP	Black Mountain	GP	Durham
Ashford, Charles Hall,	New Bern	Beam, H. M.	Roxboro	Bowling, Edwin Holt	Durham
GP	Mt. Airy	Beam, R. S., OALR	Lumberton	(Hon.), GP	Durham
*Ashby, E. C.	Mt. Airy	Beasley, E. B., GP	Fountain	Bowman, C. R.	Kannapolis
*Austin, D. R.	Charlotte	Beavers, J. W., GP	Kernersville	Bowman, E. L., GP	Lumberton
*Austin, F. D., Jr.	Charlotte	Beckwith, R. P.	Roanoke Rapids	*Bowman, H. E. (Hon.)	Aberdeen
		GP	Roanoke Rapids	Brackett, W. E.	Hendersonville
		Belcher, C. C.	Asheville	Braddy, W. H.	Burlington
		Belk, George W.	Gastonia	*Bradford, G. E.,	Winston-Salem
		*Bell, A. E.,	Mooreville	*Bradford, W. B., ObG	Charlotte
		(Hon.) GP	Mooreville	*Bradford, W. Z., ObG	Charlotte
		Bell, F. O.	Burlington	*Bradshaw, H. E.	Winston-Salem
		Bell, G. E., Ob, Pd	Wilson	Bradshaw, T. G.	Stovall
		Bell, L. Nelson	Swannanoa	Bradsher, J. S.	Stovall
		Bell, O. E.	Winton	Brandon, H. A., GP	Yadkinville
		Bell, S. A.	Cycle	*Brandon, W. O.	Concord
		Bellamy, Robert H.	Wilmington	Brantley, Hassell (Hon.)	Spring Hope
		(Hon.), GP	Wilmington	GP	Spring Hope
		*Bellows, Roland T.	Charlotte		
		Belton, J. F.	Winston-Salem		
		Benbow, J. T.	Winston-Salem		
		*Bender, John R., GP	Lexington		
		Bennett, E. C.	Elizabethtown		
		Bennett, Jos. H.,	Wadesboro		
		(Hon.), GP	Wadesboro		

Name	Address	Name	Address	Name	Address
Brantley, J. C., GP	Spring Hope	Carlton, Romulus L. (Hon.)	Winston-Salem	*Cook, J. L., PH	Greensboro
*Brenizer, A. G. (Hon.)	S Charlotte	PH	Winston-Salem	Cook, W. E.	Mebane
*Brewer, J. S., GP	Roseboro	Carmichael, T. W.,	Rowland	*Cooke, G. C., S.	Winston-Salem
Brian, Earl, I	Raleigh	GP	Rowland	Cooke, Q. E., GP	Murfreesboro
*Bridger, D. H.	Bladenboro	*Carpenter, Coy C.,	Winston-Salem	*Cooley, S. S., GP	Black Mountain
Briggs, Henry H., Jr.	Oph Asheville	Path.	Winston-Salem	*Cooper, A. Derwin, A.	Durham
Brinkley, H. M., GP	Durham	*Carr, Eugene M.	Asheville	*Cooper, G. M. (Hon.)	PH Raleigh
Brinn, T. P.	Hertford	Carr, M. L., GP	LaGrange	Coppedge, T. O., PH	Nashville
Bristow, C. O., Pd	Rockingham	*Carrington, Geo. L.,	S Burlington	*Coppidge, W. M., U.	Durham
Britt, J. N., GP	Lumberton	Carrington, S. M., S	Oxford	Corbett, Clarence Lee	Dunn
*Britt, T. C., PH	Mount Airy	Carroll, F. W., GP	Hookerton	Corbett, J. P.	Swansboro
*Brockmann, Harry L.,	S High Point	Carroll, R. Charman	Durham	*Cornwell, A. M.	Lincolnton
Brooks, F. P., GP	Greenville	Carson, Merle	Wilmington	Corpening, F. G.	Horse Shoe
Brooks, R. E., U	Burlington	Carter, Bayard, ObG	Durham	*Corpening, O. J.	(Hon.) Granite Falls
Brookshire, H. G.	(Hon.) Asheville	Carter, H. W. (Hon.)	Washington	*Corwin, Warren C.	Greensboro
Broughton, A. C., Jr.,	GP Raleigh	*Carter, Thomas L.	Gatesville	Costner, W. V., Pd	Lincolnton
*Broun, M. S.,	OALR Roanoke Rapids	Carter, W. D., PH	Morven	Couch, V. F., OALR	Winston-Salem
Brown, C. E.	Salisbury	*Casstevens, J. C., GP	Clemmons	Covington, J. M., Jr.	Wadesboro
Brown, C. R.	Goldsboro	Casteen, Kenan, OALR	Leaksville	*Cox, G. S., GP	Tabor City
Brown, G. W. (Hon.)	GP Raeford	Gasteloe, Cola S.	Windsor	Cozart, S. R., I	Greensboro
*Brown, J. A.	Banner Elk	Cater, C. D.	Greensboro	Cozart, W. S.,	GP Fuquay Springs
*Brown, J. S., Sr. (Hon.)	GP Hendersonville	Cathell, J. L.,	Lexington	Craddock, A. B., I	Asheville
Brown, Kermit E.	Asheville	GP & S	Lexington	*Craig, S. Douglas (Hon.)	I Winston-Salem
Brown, V. E.	Williamston	Caveness, Z. M. (Hon.)	Pr Raleigh	I	Winston-Salem
Brownsberger, Ethel M.,	GP Biltmore	Pr	Raleigh	Cranford, J. F.	Gastonia
*Brownsberger, John F.,	S Fletcher	*Caviness, V. S., I	Raleigh	Cranmer, J. G. (Hon.)	GP Wilmington
*Bryan, Lorenzo D.	(Hon.) Sneads Ferry	Chadwick, W. S.	Beaufort	Cranz, Oscar W., S.	Kinston
Buchanan, L. T., GP	Laurinburg	Chamblee, John S.,	PH Windsor	Craven, Erle, Jr., I	Lexington
Buckner, J. M., GP	Swannanoa	Chandler, L. D.	Gastonia	*Craven, F. C.	Asheboro
Buffaloe, J. S., (Hon.)	GP Garner	Chaplin, S. C.	Columbia	*Craven, Jean, Pd	Lexington
Bugg, C. R., Pd	Raleigh	Chapman, E. J.,	Oto & Bron Asheville	Craven, W. W. (Hon.)	Charlotte
Buie, R. M., PH	Greensboro	Cheadle, C. M.	Burnsville	*Crawford, Robt. H.,	S Rutherfordton
*Bulla, A. C., PH	Raleigh	*Cherry, J. H.	Asheville	Credle, C. S.	Colerain
*Bullitt, J. B., Path.	Chapel Hill	*Chester, P. J.,	OALR Southern Pines	Crisp, S. M., GP	Greenville
*Bullock, D. D., GP	Rowland	Choate, A. E.	Charlotte	Cromartie, R. S.	(Hon.) Elizabethtown
Bullock, Ernest S. (Hon.)	S Wilmington	Clark, Badie T., S	Wilson	Croom, Gabe H.	Asheville
Bunch, Charles	Pardue	*Clark, D. D.	Clarkton	*Crouch, A. McR.,	Pd Wilmington
*Bundy, William	N. Wilkesboro	*Clark, Harold S., S	Asheville	Crouch, T. D.	Stony Point
Burleson, W. B., GP	Plumtree	Clark, Milton S., GP	Goldsboro	Crow, S. L., I	Asheville
*Burns, J. E., Pd	Concord	*Clary, William T.,	ObG Greensboro	*Crowell, L. A., Jr.,	Lincolnton
Burt, S. P. (Hon.)	Louisburg	Clay, E. L., I	Oxford	Crowell, L. A., Sr.	(Hon.) S Lincolnton
Burton, C. N., ObG	Asheville	*Clayton, M. B., OALR	Statesville	*Crump, C. L., OALR	Asheville
Burwell, John C., Jr.,	ObG Greensboro	Clement, Edward B.	(Hon.) OALR Salisbury	Crump, Curtis, I	Asheville
*Busby, G. F., S	Salisbury	Cliff, B. F.	Brevard	*Crumpler, A. G.,	GP Fuquay Springs
Busby, J. G. (Hon.)	Salisbury	Clinton, R. S.	Gastonia	Crumpler, J. F., Pd	Rocky Mount
*Busby, Julian	Kannapolis	*Cloninger, K. L., ALR	Conover	Crumpler, Paul (Hon.)	GP Clinton
*Butler, Leroy J., Pd	Winston-Salem	*Clyatt, C. E.	Denton	*Cummings, M. P.	Reidsville
Butt, R. B.	Marion	*Cobb, Donnell B., S	Goldsboro	Currie, D. S. (Hon.)	GP Parkton
*Byerley, Andrew B.	(Hon.) Cooleemee	*Cobb, Wm. H. (Hon.)	Goldsboro	Cutchin, J. Henry, GP	Whitakers
Byerly, W. G., PH	Lenoir	Cochrane, J. D.	Newton	Dale, G. C.	Goldsboro
Caldwell, Lawrence	Newton	Cocke, C. H., Tb	Asheville	*Dalton, B. B., GP	Liberty
Caldwell, Robert M.	Mt. Airy	Cocke, Jere E. (Hon.)	Asheville	*Dalton, Wm. B.	Stokesdale
Callaway, J. Lamar,	Syph & D. Durham	*Codington, H. A.,	GP & S Wilmington	Dalton, Wm. N. (Hon.)	GP Winston-Salem
Campbell, Alton C. (Hon.)	GP Raleigh	Coffey, James C., GP	Salisbury	Daniel, N. C. (Hon.)	Pd Oxford
Cardwell, D. W.,	GP Greensboro	Cole, H. A.	Roanoke Rapids	Daniel, Walter E., U.	Charlotte
		*Cole, Walter F. (Hon.)	S Greensboro	Daniels, O. C. (Hon.)	OALR New Bern
		*Coleman, G. S. (Hon.)	Pr Raleigh	Darden, D. B.	Stantonsburg
		*Coleman, H. R.	Wilmington	*Darden, O. B.	Richmond
		Coleman, L. A., OALR	Salisbury	*Daughtridge, A. L.	Rocky Mount
		Collings, Ruth M., GP	Greensboro		
		Combs, Fielding, ALR	Winston-Salem		
		*Combs, Joseph J., GP	Raleigh		
		Cook, H. L., Jr.,	OALR Greensboro		

* Present at 1942 meeting.

Name	Address	Name	Address	Name	Address
Davenport, C. A.	Hertford	Eller, Albert J. (Hon.)	PH Wilkesboro	Flippin, Samuel T.	(Hon.) Siloam
*Davidian, V. A., S.	Smithfield	*Ellington, A. J.,	OALR Burlington	Flowers, C. E., GP	Zebulon
*Davidson, John E. S.	(Hon.) Charlotte	*Ellinwood, Everett H.	Snow Hill	Floyd, L. D. (Hon.)	GP Fair Bluff
Davis, C. B., GP	Wilmington	Elliott, A. H., PH	Wilmington	Floyd, W. Russel	Concord
Davis, J. F.	Hemp	Elliott, G. D., GP	Fair Bluff	Forbes, T. E., GP	Madison
Davis, J. M., Pd	Wadesboro	*Elliott, J. A., D	Charlotte	Forbus, Wiley D., Path	Durham
*Davis, James W., S.	Statesville	Elliott, J. C., S.	Oxford	Ford, D. E.	Washington
Davis, P. B., GP	High Point	*Elliott, W. F., OALR	Lincolnton	*Formyduval, Thurston,	GP
*Davis, R. B.	Greensboro	Elliott, Wm.	Forest City	GP	Whiteville
*Davis, Rachel D., ObG	Kinston	English, Edwin S.	Brevard	Forrest, D. E., GP	Hillsboro
Davis, Thos. W. (Hon.)	OALR Winston-Salem	*Ennett, N. T., PH	Greenville	Fortescue, W. N.	Hendersonville
*Davison, Wilburt C., Pd.	Durham	Ervin, John W., GP	Morganton	Fortune, Alex F. (Hon.)	GP
Dawson, W. E., GP	Hookerton	Erwin, Evan A., GP	Laurinburg	GP	Greensboro
Deans, A. W., GP	Battleboro	*Evans, J. E.,	S & GP Wilmington	Foster, J. F., GP	Sanford
DeArmon, J. McC.	(Hon.) Charlotte	S & GP	Warsaw	Foster, M. T., PH	Fayetteville
Dees, D. A. (Hon.)	OALR Bayboro	*Ewers, Edwin P.	Charlotte	Fox, Dennis B.	Greensboro
Dees, John Essary, U.	Durham	Faison, Elias	Winton	Fox, Herbert J.	Durham
Dees, R. E. (Hon.), S.	Greensboro	Faison, Thomas G.	Wilmington	*Fox, P. G., U.	Raleigh
*Dees, Rigdon O. (Hon.)	S Greensboro	Fales, Robert, GP	Lawndale	*Fox, R. E., PH	Raleigh
Dees, Susan Coons, Pd.	Durham	*Falls, Fred	Greensboro	*Franklin, E. W., ObG	Charlotte
DeLoatch, M. W.	Tarboro	*Farmer, William D.,	OALR Thomasville	Franklin, R. B. C., PH	Mt. Airy
Derbyshire, R. C.	Mount Airy	*Farrington, Joe	Thomasville	Freeman, Jere D.,	OALR
Dewar, Wm. B., I.	Raleigh	*Farrington, R. K.,	S Thomasville	Freeman, R. H.	Raleigh
Dick, MacDonald	Durham	S	Warsaw	Freeman, Wm. T., GP	Biltmore
Dickinson, Elijah T. (Hon.)	ALR Wilson	Farrior, J. W.	Wilmington	Fresh, W. M., GP	Hickory
Dickson, K. D., Ob	Raleigh	Farthing, J. W.,	S & GP	Fritz, J. L.	Asheboro
*Dickson, M. S., GP	Oakboro	S & GP	Wilmington	Fritz, O. G., GP	Walkertown
Dillard, G. P.	Draper	*Fassett, Burton W. (Hon.)	OALR Durham	*Fritz, William A.	Hickory
Dixon, Guy E. (Hon.)	GP Hendersonville	*Faulk, J. G., S	Monroe	Frizzelle, M. T. (Hon.)	GP
*Dixon, G. G., GP	Ayden	Fauntleroy, Jas. W.,	Zirconia	GP	Ayden
Dixon, W. H.	Rocky Mount	Fearing, Isaiah (Hon.)	Elizabeth City	*Frost, T. T.	Indianapolis, Ind.
*Donnelly, G. L.,	Phar Chapel Hill	*Fearrington, J. C. P.	Winston-Salem	*Frye, Glenn R.	Hickory
*Doshier, Wm. S.	Wilmington	Feezor, C. N.	Mooresville	Fryer, Douglas H.	Leaksville
*Drake, B. M., PH	Carthage	Feldman, Leon H., I.	Asheville	Fuller, Henry Fleming	Kinston
Drummond, C. S.,	Pr Winston-Salem	Felton, R. L., Jr., GP	Carthage	Fulp, J. F.	Stoneville
*Duckett, V. H., GP	Canton	Fenner, Edwin F.	(Hon.) Henderson	Furman, Wm. H.	Henderson
Duffy, Charles, GP	New Bern	Fergus, Leroy,	S & GP Southport	Gallant, Robert M., Ob	Charlotte
Duffy, R. N. (Hon.)	New Bern	S & GP	Durham	*Gamble, J. R. (Hon.)	S Lincolnton
Dula, F. M., S.	Lenoir	*Ferguson, G. B., Bron. &	Charlotte	Gambrell, Grover C.,	PH Lexington
Duncan, S. A., GP	Benson	*Ferguson, R. T., Gyn.	Reidsville	Garrard, R. L.	Greensboro
Dunlap, L. V. (Hon.)	GP Albemarle	*Fetner, Paul W.	Reidsville	*Garren, R. H. (Hon.)	OALR Monroe
*Dunn, R. B., ObG	Greensboro	Field, B. Lewis, GP	Salisbury	*Garrett, F. B., OALR	Rockingham
Durham, C. W., GP	Greensboro	*Fields, Leonard E.,	GP Chapel Hill	*Garrison, R. B., Pd	Hamlet
Dyer, J. W., D.	High Point	Fike, Ralph L., GP	Wilson	Garriss, F. H.	Lewiston
*Eagle, J. C.	Spencer	Finch, O. E., I.	Raleigh	*Garvey, Fred K.,	U Winston-Salem
Eagle, Watt W., OALR	Durham	Fink, Emma S., GP	Crossnore	*Garvey, R. R., U	Winston-Salem
Earle, J. B., GP	Siler City	Finklestein, Harold, S.	Durham	*Gaskin, J. S., GP	Albemarle
Earp, R. E.	Selma	Finney, J. R.	Boonville	Gaskin, Lewis R., GP	Albemarle
Easley, Eleanor B., ObG	Durham	Fitzgerald, J. D., S.	Roxboro	*Gaskin, Madge B., GP	Albemarle
*Eason, H. F., Tb.	Sanatorium	*Fitzgerald, J. H., Jr.	Lincolnton	*Gaul, John Stuart, Or.	Charlotte
Eaves, Rupert S.	Rutherfordordton	OALR	Smithfield	*Geddie, K. B.	High Point
Eckel, O. F. (Hon.)	Anes Asheville	*Fitzgerald, J. H., Jr.	Lincolnton	Gentry, George W.	(Hon.) Roxboro
Eckerson, Charles Neil	Troy	*Flagge, Phillip W. (Hon.)	GP High Point	Gibbon, James W., S.	Charlotte
Eckhart, W. F.	Crossnore	Fleetwood, Jos. A.	Conway	Gibbon, Robert L. (Hon.)	S Charlotte
*Edwards, B. O. (Hon.)	Tb Asheville	Fleming, Fred H., GP	Coats	Gibbs, E. W.	Shelby
*Edwards, Forrest D.,	GP Lawndale	*Fleming, M. I.	Rocky Mount	Gibson, L. O., GP	Statesville
Edwards, V. E., GP	Stokesdale	Fleming, Wm. LeRoy,	Syph Chapel Hill	*Gibson, M. R. (Hon.)	OALR Raleigh
Eldridge, Chas. P., GP	Raleigh	*Flemming, Giles M., S.	Cleveland	Gilbert, E. L.	Winston-Salem
*Eldridge, Harvey A.,	OALR Dunn	Flippin, J. M. (Hon.)	Pilot Mountain	Gill, Joseph A.	Elizabeth City
*Elias, Lewis W. (Hon.)	Pd Asheville			Gillespie, S. C., I.	Asheville

* Present at 1942 meeting.

Name	Address	Name	Address	Name	Address
Glascocock, Joy H. (Hon.)	Greensboro	*Hamer, Douglas, Jr., U	Lenoir	Henley, Ruth D.,	Winston-Salem
GP		*Hamer, W. A., Anes.	Charlotte	GP	
*Glenn, C. A., S.	Gastonia	*Hamilton, Jno. H., PH	Raleigh	*Henry, Marina H., Tb	Jamestown
Glenn, C. F., S.	Rutherfordton	*Hamrick, Yates, Pd		Henry, T. B., I.	Rockingham
Glenn, Channing	Elizabethtown		Boiling Springs	*Hensley, Chas. A.,	Asheville
*Glenn, H. F., Jr., GP	Gastonia	*Hand, Edgar H., PH	Charlotte	OALR	
*Glenn, Lucius N. (Hon.)		Hanes, F. M.	Durham	Herbert, Wm. P. (Hon.)	Asheville
S	Gastonia	Hansen-Pruss, O. C. E.	Durham	S	Asheville
Glover, F. O.	Salisbury	*Harbison, J. W., S.	Shelby	*Herman, Chas. B., GP	Statesville
*Gold, Ben, Pd	Shelby	Hardee, W. P., OALR	Durham	*Herndon, Claude Nash, Jr.	Winston-Salem
Gold, Chas. F.		Harden, Boyd	Burlington	Herrin, H. K.	Gastonia
(Hon.)	Rutherfordton	Harden, Graham	Burlington	Herring, E. H., GP	Raleigh
Gold, T. B.	Shelby	Harden, R. N.	Greensboro	Herring, R. A., PH	High Point
*Goode, T. V., S	Statesville	Hardin, E. R., PH	Lumberton	Hester, Wm. S.	Reidsville
Gooding, G. V.	Kenansville	Harding, S. A.	Mocksville	Hickman, H. S.	Lenoir
Goodman, A. B. (Hon.)	Lenoir	Hardy, Ira M. (Hon.)		Hicks, Calvin S. (Hon.)	Durham
Goodwin, Cleon W.	Wilson	GP	Kinston	GP	
Goodwin-Barbour, Edith,		Hare, R. B.	Wilmington	*Hicks, V. M., Oph	Raleigh
GP	Morgantown	Harmon, R. H., Ob	Boone	Highsmith, J. F., Jr.,	Fayetteville
Gorham, Herbert Jenkins	Nashville	*Harper, F. T., Jr., Tb	Graham	S	
Goswick, H. W., Jr.	Winston-Salem	*Harper, J. H. (Hon.)		Highsmith, Seavy (Hon.)	Fayetteville
		GP	Snow Hill	GP	Fayetteville
*Goudelock, Jno. J., GP	Monroe	*Harrell, Geo. T., Jr.	Winston-Salem	*Highsmith, W. C., I.	Fayetteville
Goudge, Mabel E., GP	Durham	Harrell, L. J.	Goldsboro	*Hightower, Felda,	Winston-Salem
*Gouge, A. E.	Bakersville	Harrill, H. C.	Greensboro	GP	
Gove, Anna M. (Hon.)	Greensboro	*Harrill, J. A.,		*Hilborn, Caroline	Stanfield
GP		ALR	Winston-Salem	*Hilborn, R. R.	Stanfield
Grady, E. S.	Smithfield	Harrill, L. B. (Hon.)		Hill, J. N. (Hon.) GP	Murphy
Grady, Jas. C. (Hon.) GP	Kenly	S	Caroleen	*Hill, M. D., GP	Raleigh
Graham, Charles,		*Harris, W. T.	Troy	*Hill, Wm. I (Hon.)	Albemarle
S & GP	Wilmington	Harrison, Edmund	Greensboro	Hinnant, Milford, GP	Micro
Graham, W. A., ObG	Durham	(Hon.)		*Hipp, Edward R.	Charlotte
*Grantham, W. L. (Hon.)	Asheville	*Harrison, Edward T.,	High Point	Hocutt, Battle A. (Hon.)	Clayton
U		S		GP	
Graves, Robert Williams	Durham	Harrison, Tinsley R.	Winston-Salem	*Hodgin, H. H. (Hon.)	Red Springs
N		Harriss, Andrew H. (Hon.)		GP	
Grayson, C. S. (Hon.)	High Point	GP	Wilmington	Hoggard, J. T., GP	Wilmington
GP		*Harry, J. M., U	Fayetteville	Holladay, L. W.	High Point
Green, J. V.	Fayetteville	Hart, Deryl, S.	Durham	Hollister, William	New Bern
Green, Wm. W. (Hon.)		Hart, V. K.	Charlotte	Holloway, Joseph C., GP	Durham
S	Tarboro	Hartman, B. H.	Asheville	Holloway, Robert Lee (Hon.)	Durham
Greene, Joseph B. (Hon.)	Asheville	Hartness, W. R.	Jonesboro	GP	
OALR		Harton, K. A., GP	Durham	Hollyday, W. M., OALR	Asheville
*Greene, P. Y., PH	Graham	Harvey, W.	Greensboro	*Holman, Russel L.,	Chapel Hill
Greene, W. A., GP	Whiteville	*Hatcher, M. A.	Hamlet	Path	
Greenhill, M. H.	Durham	Hathcock, Thomas A. (Hon.)		Holmes, A. B., GP	Fairmont
Gregg, Alfred D., PH	Henderson	GP	Norwood	*Holmes, G. W.,	Winston-Salem
Grier, C. T.	Carthage	Hawes, C. F.	Rose Hill	OrS	
Griffin, H. L.	Asheboro	*Haynes, J. W.	Shallotte	*Holt, D. W., I	Greensboro
*Griffin, H. W.	Hickory	Hays, B. K. (Hon.) T	Oxford	Holt, Wm. P. (Hon.) S	Erwin
*Griffin, M. A., Psy	Asheville	Haywood, C. L., Jr., S	Elkin	*Holton, A. J.	Kannapolis
Griffin, W. R., Psy	Asheville	*Haywood, Hubert B. (Hon.)		Holton, Thos. J.	Charlotte
Griffis, J. W.	Denton	I	Raleigh	Hooper, Joseph W.,	Wilmington
Griffith, F. W. (Hon.)	Asheville	Head, W. T.	Campobello, S. C.	S	
Griffith, L. M., OALR	Asheville	*Hedrick, Clyde R.	Lenoir	Hoover, C. H. (Hon.)	Crouse
Grigg, John R., GP	Gastonia	Hedgepeth, E. M.	Roxboro	GP	
Griggs, W. T. (Hon.)	Poplar Branch	Hedgepeth, E. McG.	Chapel Hill	*Hoover, Wm. A., S	Murphy
Pr		*Hedgepeth, L. R.,	Lumberton	Horack, Harold M.	Durham
Grimes, W. L., S.	Winston-Salem	OALR		Horton, M. C. (Hon.)	Raleigh
*Grollman, Arthur	Winston-Salem	Hedgepeth, W. C.,	Lumberton	*Horton, W. C. (Hon.)	Raleigh
Groves, R. B., GP	Lowell	Ob.		Pr	
Gurganus, G. E.	Jacksonville	*Hege, J. Roy, PH	Winston-Salem	Houser, E. A. (Hon.)	Shelby
Gwyn, H. L.	Yanceyville	Heighway, S. C. (Hon.)		*Houser, Forrest M.	Cherryville
*Hackler, R. H., R	Washington	GP	Murphy	*Hovis, L. W. (Hon.)	Charlotte
Hagaman, J. B.	Boone	*Helms, J. B.	Morgantown	OALR	
Hagaman, L. D.	Lenoir	Helsabeck, C. J.	Walnut Cove	*Howard, C. E., R	Goldsboro
Hagna, L. W.	Marion	Helsabeck, R. S.	King	Bowell, W. L. (Hon.)	Ellerbe
Halford, Jos. W.	Lillington	Hemphill, C. H.	Black Mountain	Hubbard, Charles C.	Farmer
(Hon.)		Henderson, C. C.	Mt. Olive	(Hon.)	
Hall, W. D., P	Roanoke Rapids	Henderson, John P.	Jacksonville	*Hubbard, Fred C.,	N. Wilkesboro
*Ham, Clem, Syph.	Monroe	*Henderson-Smathers, Irma	Asheville	S	
Hamblen, E. C., OhG	Durham	C, GP		Hudgins, H. A., GP	Rutherfordton
Hambriek, Robt. T., Pr	Hickory	Hendrix, James Paisley	Durham	Huffines, T. R., U	Asheville
Hamer, A. W., GP	Morgantown				

* Present at 1942 meeting.

Name	Address	Name	Address	Name	Address
Hundley, Deane, Jr.	Wallace	Judd, E. C. (Hon.)	S. Raleigh	Lane, John L.	Rocky Mount
*Hunsucker, C. R.	Hickory	Judd, Glenn B.	GP. Varina	OALR	Welcome
Hunt, J. F. (Hon.)	Spindale	Judd, James M. (Hon.)	GP. Varina	*Lanier, V. C.	GP. Winston-Salem
*Hunt, J. S., Pd.	Charlotte	Justice, Gaston B.	(Hon.) Marion	Lassiter, V. C., S.	Badin
*Hunt, W. Bryce	Lexington	*Justis, L. H.	Littleton	Lassiter, Will H., GP.	Selma
Hunter, F. P.	Warrenton	Kafer, Oscar A.	New Bern	Laton, James F. (Hon.)	OALR Albemarle
Hunter, W. B., PH	Lillington	Keever, J. W., T.	Hickory	Lattimore, E. B. (Hon.)	Shelby
Hunter, W. C.	Wilson	*Keiger, O. R., GP.	Winston-Salem	*Lawrence, B. J., S.	Raleigh
Hurdle, S. W.,	GP. Winston-Salem	Keiter, W. E., Pd.	Kinston	*Lawson, Robert Barrett,	Pd. Winston-Salem
Hutchens, E. M. (Hon.)	N. Wilkesboro	*Keith, Marion Y., Pd.	Greensboro	*Leath, McLean B.,	OALR High Point
GP.	Bladenboro	*Kelly, Luther W., I.	Charlotte	*LeBauer, Maurice L.,	S. Greensboro
Hutchinson, S. S.	Beaufort	*Kemp, M. D., P.	Pinebluff	*LeBauer, S. F., I.	Greensboro
Hyde, Frank E.	Eureka	*Kendall, B. H.	Shelby	*Lee, J. Marshall,	GP. Newton Grove
Irwin, Henderson	Goldsboro	Kende, T. Norbert	Augusta, Ga.	Lee, L. V. (Hon.)	Lattimore
*Ivey, H. B., R.	GP. Winston-Salem	*Kendrick, Charles	Valdese	*Lee, Mike, GP.	Kinston
Jacobs, J. E., OrS.	Charlotte	*Kennedy, G. W.	Beulaville	Lee, Thos. L., ObG	Kinston
Jackson, M. V.	Princeton	*Kennedy, John P., S.	Charlotte	*Leinbach, R. F. (Hon.)	I. Charlotte
Jackson, Walter Leo	High Point	*Kent, Alfred A.	(Hon.) Winter Park, Fla.	*Lennon, H. C.	Greensboro
Jacocks, W. P.	Delhi, India	*Kent, Alfred A., Jr.	Granite Falls	*Leonard, J. C., Jr.	Lexington
James, Albert W., S.	Laurinburg	Kerns, T. C., OALR	Durham	*Lewis, J. S.	Hickory
*James, Arthur A., Jr.,	GP. Sanford	*Kerr, J. E. (Hon.)	GP. Danbury	Lewis, S. V.	Plymouth
GP.	Laurinburg	Kerr, Jos. T.	Wilson	Liles, L. C., Psy.	Raleigh
*James, F. P., GP.	Hamlet	Kesler, R. C.,	OALR Fayetteville	*Lilly, James M. (Hon.)	OALR Fayetteville
*James, W. D. (Hon.)	S. Hamlet	*Ketchie, J. M.	Salisbury	Lineberry, John A.	Kenansville
*James, W. D., Jr., S.	Thomasville	Ketner, Fred Y.	Concord	Linville, A. Y. (Hon.)	GP. Winston-Salem
Jarman, F. G., S.	Roanoke Rapids	Kibler, W. H., ALR	Morganton	*Lister, J. L. (Hon.)	Jackson
*Jennings, R. G.	Tryon	Killian, Frank M.,	OALR Franklin	Little, H. L.	Gibsonville
Jervey, A. J., S.	Laurinburg	*Kimmelsteil, Paul	Charlotte	Little, Lonnie M.,	GP. Statesville
John, Peter (Hon.)	GP. Garland	King, D. I. C.,	GP. Hendersonville	*Livingston, E. A., GP.	Gibson
GP.	Red Springs	King, E. S., Bact.	Winston-Salem	Logan, F. W. H.	Rutherfordton
*Johnson, A. N., GP.	Cherokee	King, Parks M. (Hon.)	Charlotte	*Lohr, Dermot, GP.	Lexington
Johnson, C. T., GP.	Whiteville	*King, Richard M. (Hon.)	Concord	*London, A. H., Jr., Pd.	Durham
Johnson, Edward J.	Spray	King, Robert Rogers, PH.	Boone	Long, Fred Y. (Hon.)	Catawba
Johnson, Floyd (Hon.)	GP. Wilmington	Kinlaw, M. C., GP.	Pembroke	Long, Glenn	Newton
Johnson, Geo. F., I.	Wilmington	Kinsman, Henry F. (Hon.)	P & S Hamlet	*Long, V. M. (Hon.)	U. Winston-Salem
Johnson, Geo. W.,	GP. Greensboro	Kirby, Guy S. (Hon.)	Marion	Long, W. M., S.	Mocksville
ObG	Old Fort	*Kirby, W. L.,	R & D Winston-Salem	*Long, Z. F., Pd.	Rockingham
*Johnson, Harry L., S.	Elkin	*Kirk, W. R. (Hon.)	GP. Hendersonville	Lord, Marjory J.	Montreat
Johnson, John B.	Lumberton	Kirkpatrick, W. L.,	GP. Waynesville	Lott, W. C., U.	Asheville
Johnson, Joseph L.	Reidsville	Kirksey, James J., Pd.	Morganton	*Lounsberry, J. B.	Wilmington
Johnson, J. R., S.	Canton	Kitchin, Thurman D.	(Hon.) Wake Forest	Love, Bedford E. (Hon.)	Roxboro
*Johnson, Paul W.,	Winston-Salem	*Klut, A. F.	Maiden	*Love, Wm. M., GP.	Monroe
Obs	Winston-Salem	*Knight, Floyd L., S.	Sanford	Lovelace, Thos. C.	Henrietta
*Johnson, Thomas C. (Hon.)	S. Lumberton	*Knowles, D. L.	Rocky Mount	*Lowery, John R.	Salisbury
Johnson, W. A. (Hon.)	Reidsville	*Knox, J. C., PH.	Raleigh	*Lubchenko, N. E.	Harrisburg
Johnson, W. C., GP.	Canton	Knox, John (Hon.)	GP. Lumberton	Lupton, C. C.	Burlington
*Johnson, Walter R., I.	Asheville	Koogler, B. Robert	Star	*Lupton, E. S., Pd.	Graham
*Johnson, Wingate M. (Hon.)	I. Winston-Salem	*Koonce, Donald B.,	S & GP. Wilmington	*Lutterloh, I. H., Jr.,	S. Sanford
I	Durham	Koonce, S. Everett (Hon.)	OALR Wilmington	*Lyday, C. E.	Gastonia
Johnston, Christopher	Charlotte	Kornegay, L. W. (Hon.)	S. Rocky Mount	*Lyday, R. O., S.	Greensboro
Johnston, J. G., OALR	Manteo	*Kosove, Albert A.	Charlotte	Lyman, Richard S.	Durham
Johnston, W. W., ObG	Marion	*Kosove, Irene L.	Charlotte	*Lynch, Geo. B.	Brevard
*Jonas, John F. (Hon.)	Lansing	*Kress, Esta L.	Wadesboro	Lyon, B. R.	Greensboro
Jones, Arthur Lee	Winston-Salem	*Kress, J. H., S.	Wadesboro	*MacConnell, John W. (Hon.)	OALR Davidson
*Jones, Beverly N.,	OALR Winston-Salem	Kroncke, Fred G.	Roanoke Rapids	*MacFadyen, Paul R.	Concord
OALR	Apex	*Lafferty, Robert H. (Hon.)	R. Charlotte	*MacMillan, E. A.,	I & NP. Winston-Salem
Jones, C. C.	Lansing	Lancaster, F. J.	Lexington	*MacNider, Wm. deB.	(Hon.) Chapel Hill
Jones, D. C.	Newton	Lancaster, W. J., S.	Wilmington	*Maddrey, M. Crocker	Roanoke Rapids
*Jones, F. W., S.	Sanatorium	Lane, Bessie E., I.	Raleigh	*Makepeace, A. Watts	Chapel Hill
*Jones, Julia M.	GP. New Bern				
Jones, R. Duval (Hon.)	S. Burnsville				
S	Winston-Salem				
*Jones, R. O.	Gastonia				
Jones, R. Rives,	Greensboro				
GP.	Nashville				
*Jones, W. M., Pd.	Windsor				
*Jones, Wm. M. (Hon.)	Asheboro				
Jones, W. S., GP.	Enfield				
Jordan, W. P., GP.					
Joyner, Geo. W., S.					
Joyner, P. W.					

* Present at 1942 meeting.

Name	Address	Name	Address	Name	Address
Malloy, S. A. (Hon.)	Yanceyville	*McDonald, A. M., U.	Charlotte	McPhail, L. D. (Hon.)	Charlotte
*Maness, A. K., Ob	Greensboro	McDonald, Lester B.,	Hendersonville	Pr	Charlotte
Mann, I. Thurman, G.	High Point	GP	Thomasville	McPheeters, S. B., PH.	Goldsboro
*Manning, I. H. (Hon.)	Chapel Hill	McDonald, R. L., GP	Thomasville	*McPherson, C. W. (Hon.)	Burlington
Mariner, N. B. (Hon.)	Belhaven	*McDowell, Harold C.,	Winston-Salem	OALR	Burlington
Markham, Blackwell, S.	Durham	Orth	Durham	McPherson, R. G. (Hon.)	Saxapahaw
Marlowe, W. A.,	Walstonburg	McDowell, Roy H.	Durham	*McPherson, S. D. (Hon.)	Durham
GP	Pinehurst	McDowell, W. K.	Rocky Mount	OALR	Asheville
Marr, M. W., I	Salisbury	PH	Murphy	Mears, George A., S.	Asheville
Marsh, Frank B.	Winston-Salem	McDuffie, James T., GP	Wilmington	Mebane, W. C., Jr.,	Wilmington
*Marshall, J. F., S.	Durham	McEachern, Duncan	Marshall	S & GP	Durham
Martin, Donald S.,	Lumberton	GP	Statesville	Menefee, E. E., Jr.	Hickory
Pd. & Bact.	Dunn	McElroy, J. L.	Fayetteville	Menzies, H. C. (Hon.)	Hickory
Martin, J. A.,	Roanoke Rapids	*McElwee, Ross S. (Hon.)	Fayetteville	Menzies, H. H.	Hickory
GP & Pd	Mocksville	R	Fayetteville	*Merritt, Jesse Fred.	Greensboro
Martin, J. F. (Hon.),	Mt. Airy	McFayden, O. L., Jr.	Lincolnton	Merritt, John H. (Hon.)	Woodsdale
OALR	Maxton	McFayden, O. L., Sr., (Hon.)	Champion	Mewborn, J. M.	Farmville
Martin, J. W.,	Davidson	I	Hamlet	*Michal, Mary B. H.,	Spruce Pine
GP	Charlotte	*McGeachy, R. S. (Hon.)	Asheville	GP	Chapel Hill
Martin, Lester, S.	Raeford	PH	Lincolnton	Nilam, D. F.,	Chapel Hill
Martin, Moir S., S.	Greensboro	McGee, J. M.	Old Fort	PH & Res.	Chapel Hill
Martin, T. A., GP	Shelby	McGee, Robert L., GP	Marion	Miles, May S. (Hon.)	Greensboro
*Martin, Wm. F., S.	Clinton	McGehee, J. W. (Hon.)	Charlotte	Miles, Walter W., GP	Champion
Martin, W. J.	Sanford	Ob	Charlotte	*Milham, C. G., I & R.	Hamlet
*Massey, C. C., Pr	Sanford	McGowan, Claudius	Asheville	Millender, Chas. W.	Asheville
Matheson, J. Gaddy	Sanford	McGowan, Joseph Francis	Asheville	*Miller, Harry, GP	Murphy
Matheson, R. A., GP	Sanford	OALR	Asheville	Miller, J. F., S.	Marion
Mathews, Robert Wm.	Sanford	McGuire, B. B., PH.	Asheville	*Miller, Oscar L., Or.	Charlotte
Greensboro	Sanford	McIntosh, D. M. (Hon.)	Asheville	Miller, Robert B. (Hon.)	Charlotte
Mathews, Vann M., Ob.	Sanford	*McIntosh, D. M., Jr.	Asheville	Pd	Goldsboro
Mathieson, K. M., GP	Sanford	McIntyre, Stephen.	Asheville	*Miller, R. C.	Gastonia
Mathews, E. B.	Sanford	S & U	Asheville	*Miller, W. E., S.	Whiteville
Mathews, J. O. (Hon.)	Sanford	*McIver, Lynn (Hon.)	Asheville	*Milliken, J. S.	Southern Pines
GP	Sanford	GP	Asheville	Mills, Charles R.,	Greensboro
Mathews, M. L. (Hon.)	Sanford	*McKay, Hamilton W.,	Asheville	Oph	Greensboro
OALR	Sanford	U	Asheville	Mitchell, G. T., GP	Wilkesboro
Mathews, W. S. Bessemer City	Sanford	McKay, Joseph F. (Hon.)	Asheville	*Mitchell, Geo. W.,	Wilson
Mathews, Wm. W.	Sanford	Buies Creek	Asheville	Mitchell, L. P.	Spindale
*Maulden, Paul R., S.	Sanford	*McKay, Robert W., U.	Asheville	Mitchell, Paul H. (Hon.)	Asheville
Mayer, W. B., D.	Sanford	McKay, W. P.,	Asheville	Mitchell, R. H.	Gastonia
*McAdams, C. R.	Sanford	OALR	Asheville	Nitchell, Z. P.	Shelby
*McAlister, H. A.	Sanford	McKee, John S., Jr.	Asheville	Mitchener, J. S., OALR	Raleigh
McAlister, Jean	Sanford	McKee, Lewis Middleton.	Asheville	*Mock, C. Glenn	Salisbury
McAnally, J. McG.,	Sanford	GP	Asheville	*Mock, Frank Lowe (Hon.)	Lexington
S	Sanford	*McKenzie, B. W., S	Asheville	Monk, Henry L. (Hon.)	Salisbury
McAnally, Wm. J. (Hon.)	Sanford	*McKenzie, Wayland N.,	Asheville	Monroe, C. R., S	Pinehurst
High Point	Sanford	PH	Asheville	*Monroe, Lance T.	Kannapolis
McBane, T. W., GP	Sanford	*McKnight, R. B., S	Asheville	Montgomery, Harry M. (Hon.)	Burlington
*McBee, Paul, S.	Sanford	McLain, John E. G.	Asheville	Moore, A. W.	Charlotte
McBryde, Angus M., Pd	Sanford	McLamb, George Thomas	Asheville	*Moore, B. D.	Mt. Holly
*McCain, P. P., Tb.	Sanford	Mebane	Asheville	Moore, D. Bain, S.	Badin
*McCain, Walkup K.	Sanford	*McLaughlin, C. S. (Hon.)	Asheville	*Moore, D. F., ObG	Shelby
*McCain, Wm. R. (Hon.)	Sanford	Charlotte	Asheville	Moore, D. L.	Winterville
High Point	Sanford	McLaughlin, J. E. (Hon.)	Asheville	*Moore, Julian A., S	Asheville
McCall, A. C. OALR	Asheville	Troutmans	Asheville	Moore, L. W.	Beaufort
*McCall, W. H.	Asheville	McLean, Allan (Hon.)	Asheville	*Moore, Oren (Hon.)	Charlotte
McC Campbell, John (Hon.)	Asheville	Morganton	Asheville	Ob	Charlotte
P	Asheville	*McLean, E. K.	Asheville	*Moore, R. A., Or.	Charlotte
McCants, C. H., S.	Asheville	*McLelland, W. D.	Asheville	*Moore, R. A., Or.	Winston-Salem
McC Chesney, W. W., Ob	Asheville	McLemore, Geo. A. (Hon.)	Asheville	*Moore, W. Houston (Hon.)	Wilmington
*McClees, E. C.	Asheville	GP	Asheville	GP & Ob	Wilmington
McClelland, J. O., GP	Asheville	Smithfield	Asheville	*Morehead, Robert P.,	Winston-Salem
McClelland, J. O., GP	Asheville	McLeod, A. H. (Hon.)	Asheville	Path	Winston-Salem
McConnell, H. R.	Asheville	McLeod, J. H.,	Asheville	*Morgan, B. E., GP	Asheville
McCotter, St. Elmo (Hon.)	Asheville	GP	Asheville	Morgan, G. A.	Asheville
Bayboro	Asheville	*McLeod, J. P., U.	Asheville	*Morgan, W. G.	Chapel Hill
Charlotte	Asheville	McLeod, Vida C.	Asheville	Morris, John W.,	N. Wilkesboro
Fairview	Asheville	McLeod, W. G.	Asheville	Morris, Joseph A. (Hon.)	Franklinton
McCracken, J. R. (Hon.)	Asheville	*McLeod, W. L.	Asheville		
OALR	Asheville	Norwood	Asheville		
McCracken, M. H., GP	Asheville	*McManus, Hugh F., Jr.	Asheville		
McCuiston, A. M., Pr	Asheville	McMillan, J. M. (Hon.)	Asheville		
*McCutchan, Frank	Asheville	*McMillan, R. D. (Hon.)	Asheville		
McDade, B. B.	Asheville	GP	Asheville		
Burlington	Asheville	McMillan, R. L.	Asheville		
	Asheville	*McNairy, Caroline, Ob	Asheville		

Name	Address	Name	Address	Name	Address
Morris, Rae H.	Concord	*Odum, R. T.	Winston-Salem	Peeler, John H. (Hon.)	Ob
Morrow, W. C., GP.	Andrews	Oehlbeck, L. W., R.	Morganton	Ob	Salisbury
Moseley, Z. V., PH.	Kinston	*Offutt, Vernon D.	Kinston	Peery, Vance P., OALR.	Kinston
Moss, G. O.	Cliffside	Ogburn, H. H., S.	Greensboro	Peete, C. H. (Hon.)	Ob
Motley, F. E., ALR.	Charlotte	*Ogburn, L. C., Ob.	Winston-Salem	Ob	Warrenton
*Mudgett, W. C. (Hon.)	I	Oliver, A. S., Ob.	Raleigh	Pegg, F. G.	Winston-Salem
I	Southern Pines	*Oliver, J. A.	Rockwell	Pendleton, Wilson.	Asheville
*Munroe, H. Stokes (Hon.)	S	Orgain, Edward S.	Durham	*Pepper, John Kerr (Hon.)	R
S	Charlotte	*Ormand, J. W., GP.	Monroe	R	Winston-Salem
Munt, H. F.	Winston-Salem	Ormond, A. L.,	Tb	*Perry, A. H.	Wood
Murchison, D. R.,	GP	Ormond, A. L.,	Black Mountain	*Perry, D. R., GP.	Durham
GP	Wilmington	*Orr, Charles C. (Hon.)	I	Perry, E. M., GP.	Rocky Mount
*Murphy, G. W., R.	Asheville	Orr, P. B. (Hon.)	Asheville	Perry, G. G., GP.	High Point
*Murray, R. L., GP.	Raeford	Osborne, Gladys H.,	GP	*Perry, H. B., GP.	Boone
*Myers, Alonzo, Or.	Charlotte	GP	Waynesville	Perry, H. G.	Louisburg
*Myers, H. T.	Lexington	Outland, R. B.	Rich Square	Person, E. C. (Hon.)	OALR
*Myers, John Q. (Hon.)	S	*Outlaw, J. K., OALR.	Albemarle	Peters, August R.	Pikeville
S	Charlotte	Owlan, C. F., Jr., GP.	Canton	Peters, W. A., S.	Elizabeth City
Nalle, B. C. (Hon.)	ObG	Owen, D. S.	Fayetteville	*Peterson, C. A. (Hon.)	Spruce Pine
ObG	Charlotte	Owen, J. F., NP.	Raleigh	*Pettus, W. H., Jr., S.	Charlotte
*Nance, C. L.	Charlotte	Owen, M. L., GP.	Canton	*Pfohl, Samuel F. (Hon.)	GP
Nance, J. E.	Kannapolis	*Owen, Robert H., GP.	Canton	GP	Winston-Salem
Nash, J. Fred.	St. Pauls	*Owens, Francis Leroy.	Pinehurst	Phillips, C. H. (Hon.)	Thomasville
Neal, John W. (Hon.)	GP	Owens, Z. D.	Elizabeth City	Phillips, E. N., GP.	N. Wilkesboro
GP	Monroe	*Ownbey, Arthur D.	Greensboro	Pickett, John A. (Hon.)	Burlington
Neal, Kemp P., S.	Raleigh	*Pace, K. B., GP.	Greenville	Pipes, David M.	Greensboro
Neal, Paul N., Ob.	Raleigh	Paddison, J. R. (Hon.)	GP	*Pittman, M. A., TrS.	Wilson
*Neblett, H. C., Oph.	Charlotte	GP	Kernersville	Pittman, R. L. (Hon.)	Fayetteville
Neese, K. E., GP.	Monroe	Padgett, Chas. K.	Shelby	Pittman, W. A., U.	Fayetteville
Nelson, Robert J. (Hon.)	Robersonville	Padgett, Philip C.	Kings Mountain	Pollock, Raymond (Hon.)	New Bern
Nelson, W. H., GP.	Clinton	Palmer, Horace, GP.	Littleton	*Pool, B. B., GP.	Winston-Salem
*Neville, C. H.	Scotland Neck	*Palmer, M. C.	Tryon	*Pool, C. Glenn.	Winston-Salem
Newcombe, A. P., Jr.	Henderson	*Palmer, Yates S., GP.	Valdese	Poole, M. B.	Dunn
Newell, H. A. (Hon.)	OALR	Papineau, A. T.	Plymouth	Post, J. J., GP.	Greensboro
OALR	Henderson	*Parker, H. R., GP.	Greensboro	Powell, Albert H., GP.	Durham
*Newell, Leon B. (Hon.)	Charlotte	Parker, J. J.	Elizabeth City	Powell, H. S., GP.	Gastonia
*Newland, Charles L.,	S	Parker, O. L., OALR.	Clinton	Powell, Jesse A. (Hon.)	Edenton
S	Brevard	Parker, Paul G.	Erwin	Powers, Frank P., ALR.	Raleigh
*Newman, H. H., S.	Salisbury	*Parker, S. F.	Shelby	Prefontaine, J. E.,	OALR
*Newton, Howard L.	Charlotte	Parker, W. T., S.	Fayetteville	OALR	Greensboro
*Newton, Wm. K.,	OALR	Parks, W. B.	Gastonia	Pressly, J. M.	Belmont
OALR	N. Wilkesboro	Parks, W. C., Jr.	High Point	Preston, John Z.	Tryon
Nichols, Alvin A. (Hon.)	Sylva	Parrette, Nettie C.	Robbinsville	Price, H. H.	Draper
Nichols, Asbury S.	Sylva	Parrette, Richard G.	Andrews	Pritchard, G. L., GP.	La Grange
Nichols, Austin F. (Hon.)	Roxboro	Parrott, John A.	Kinston	Proctor, I. M., ObG.	Raleigh
Nichols, R. E., Jr., GP.	Durham	Parrott, M. C., S.	Kinston	Pruitt, Sam P.	Shelby
Nichols, Rhodes E., Sr. (Hon.),	GP	Parrott, Wm. T. (Hon.)	GP	Pugh, Chas. H. (Hon.)	Gastonia
GP	Durham	GP	Kinston	Pulliam, B. E.	Winston-Salem
Nicholson, B. M. (Hon.)	Enfield	Parsons, W. H., GP.	Ellerbe	Purdy, J. J.	Oriental
Nicholson, N. G., Jr.	Rockingham	Pate, A. H.	Goldsboro	Putney, R. H.	Elm City
Nicholson, P. A. (Hon.), Ob	Washington	Pate, J. F., GP.	Canton	Quickel, John C.,	OALR
Ob	Washington	*Pate, James G., GP.	Gibson	OALR	Gastonia
Nicholson, W. M.	Durham	Patman, W. L., S.	Siler City	Quinn, R. F.	Magnolia
*Nisbet, D. Heath, I.	Charlotte	Patrick, G. R., Jr.	Bessemer City	Raby, J. G., GP.	Tarboro
*Noble, R. P. (Hon.)	R	Patrick, L. N.	Gastonia	*Rainey, W. T., I.	Fayetteville
Noblin, Roy L.	Oxford	*Patterson, Fred M.,	U	Ramsaur, J. T., GP.	Cherryville
Noel, W. W.	Henderson	U	Greensboro	Ramsaur, W. L., Kings Mountain	
Noell, R. H., GP.	Rocky Mount	Patterson, J. F. (Hon.)	GP	Ramsey, Jas. G., S.	Washington
Nolan, J. O.	Kannapolis	GP	New Bern	Rand, C. H., Ob.	Fremont
Norburn, C. S., S.	Asheville	Patterson, J. H.	Broadway	Raney, R. B., Or.	Durham
Norburn, R. L., S.	Asheville	Patton, W. H., Jr.,	GP	Rankin, Pressly R. (Hon.)	Mt. Gilcad
Norfeet, E. P., Pd.	Roxobel	GP	Morganton	Rankin, S. W.,	OALR
*Norman, J. S., OALR.	Gastonia	Pay, W. C.	Hendersonville	OALR	Winston-Salem
*Norman-Glenn, Dorothy F.	Gastonia	Payne, John A. III.	Sunbury	*Rankin, Watson S. (Hon.)	PH
GP	Gastonia	*Payne, J. W.	Cherryville	PH	Charlotte
Norment, W. B., S.	Greensboro	*Pearson, Arthur A.	Fletcher	*Ranson, J. L., (Hon.)	Anes
Norris, F. L.	Benlavlille	Pearson, H. O., GP.	Pinetops	Charlotte	
*Northington, J. M. (Hon.)	I	*Peasley, E. D., Path.	Raleigh		
I	Charlotte	*Peck, W. M.	Sanatorium		
Norwood, Ballard, PH.	Oxford	Peede, A. W.	Lillington		
Norwin, Preston, S.	Charlotte	*Peeler, Clarence N. (Hon.)	ALR		
*O'Briant, A. L.	Raeford	Charlotte			
O'Dell, J. W.	Dunn				

* Present at 1912 meeting.

Name	Address	Name	Address	Name	Address
*Ravenel, S. F., Pd	Greensboro	Royster, S. S. (Hon.)	Shelby	Sink, C. S., GP	N. Wilkesboro
Ray, F. L., U	Charlotte	Royster, T. H., OALR	Tarboro	*Sink, V. Rex.	
*Ray, John B. (Hon.)	Leaksville	Rubin, A. S.	Greensboro	ALR	Winston-Salem
Ray, O. L. (Hon.) GP	Raleigh	Rucker, A. A. (Hon.)	Rutherfordton	*Sisk, C. N., PH	Waynesville
Ray, S. P.	Leaksville	Rudisill, J. D., S	Lenoir	*Sisk, W. N., PH	Asheville
Reaves, W. P. (Hon.)	Greensboro	Ruffin, J. M.	Durham	Siske, Grady C.	Pleasant Garden
OALR		*Russell, C. R.	Granite Falls	Skinner, L. C. (Hon.)	Greenville
Reavis, Chas. W., R	Kinston	Russell, Jesse M. (Hon.)	Canton	Slate, J. E.	High Point
Redding, A. H. (Hon.)	Cedar Falls	GP		*Slate, John S. (Hon.)	Winston-Salem
Redwine, J. Dan.	Lexington	Russell, Lloyd P.	Fletcher	GP	
Reed, D. H. (Hon.) GP	Wagram	Russell, W. M., OALR	Asheville	Slate, J. W.	High Point
Reeves, G. F.	East Bend	*Sabiston, Frank, OALR	Kinston	*Slate, M. L.	High Point
Reeves, J. L., GP	Canton	*Sader, Julius, GP	Brevard	Slate, Wesley C. (Hon.)	Spencer
Reeves, J. L.	Hope Mills	*Sadler, R. C., GP	Whiteville	Sloan, A. B., GP	Mooreville
Reeves, R. J., GP	Leicester	Saliba, M. M. (Hon.)	Wilson	*Sloan, D. B., OALR	Wilmington
*Reeves, Robert J., R	Durham	Oph		*Sloan, H. L., Oph	Charlotte
*Register, J. F., Or	Greensboro	Salley, E. McQueen (Hon.)	Hendersonville	Sloan, Wm. H., GP	Garland
*Reid, C. Graham	Charlotte	GP		*Sloop, E. H. (Hon.)	Crossnore
*Reid, James W. (Hon.)	Lowell	Salmons, H. C. (Hon.)	Elkin	Small, Victor R., GP	Clinton
Reitzel, C. E. (Hon.)	High Point	Salters, Fred,	OALR	Smith, A. Jones	Black Creek
*Reynolds, C. V. (Hon.)	PH	Elizabeth City		Smith, Alick T., GP	Greensboro
Rhodes, J. S. (Hon.)	Raleigh	Sample, R. C., GP	Hendersonville	Smith, Annie T., G	Durham
Rhodes, J. S., U	Raleigh	*Saunders, J. R.	Morganton	Smith, B. R., I	Asheville
*Rhudy, B. E., R	Greensboro	Saunders, John T., Or	Asheville	Smith, C. T., I	Rocky Mount
*Rhyne, R. E. (Hon.)	PH	*Saunders, S. Stewart,	Pd	Smith, D. L., Pd	Saluda
PH		High Point		Smith, D. T.	Durham
Rhyne, S. A., GP	Gastonia	*Schaffle, Karl, Tb	Asheville	*Smith, F. C., Oph	Charlotte
*Richardson, W. P.,	Statesville	Schallert, P. O. (Hon.)	Winston-Salem	Smith, F. L.	Burlington
PH		*Schenk, Sam M., S	Shelby	*Smith, G. M., GP	Monroe
Kichie, R. F., Psy	Raleigh	*Schiebel, Herman Max	Durham	*Smith, H. B., GP	N. Wilkesboro
Ricks, L. E. (Hon.) GP	Fairmont	S		*Smith, J. A., S	Lexington
Kiddle, J. B. (Hon.)	Morganton	Schoenheit, E. W., I	Asheville	Smith, J. E.	Windsor
*Riggsbee, A. E. (Hon.)	GP	Schoonover, R. A. (Hon.)	Greensboro	Smith, J. G., I	Rocky Mount
GP		Schuler, J. E., GP	Durham	Smith, J. McN. (Hon.)	Rowland
*Ringer, Paul H. (Hon.)	Tb	Scott, R. C.	Asheville	Smith, Joseph	Greenville
Asheville		Scott, S. F.	Union Ridge	Smith, O. F. (Hon.)	
Roberson, Foy (Hon.) S	Durham	Scruggs, W. H.	Andrews	Smith, R. M.	Greensboro
Roberson, R. S., GP	Waynesville	*Scruggs, W. M., S	Charlotte	Smith, Sidney, U	Raleigh
Roberts, B. N., GP	Hillsboro	*Seay, H. L., Tb	Huntersville	Smith, Slade A.,	
Roberts, B. W., Pd	Durham	*Seay, T. W.	Spencer	OALR	Whiteville
*Roberts, W. M., Or	Gastonia	*Selby, W. E., NP	Charlotte	Smith, W. C.	Goldsboro
Robertson, E. M., S	Durham	Sessoms, E. T., GP	Roseboro	Smith, W. F. (Hon.)	
*Robertson, J. F., S	Wilmington	Sevier, J. T. (Hon.)	Asheville	GP	Chadbourne
*Robertson, J. M., GP	Harmony	*Shafer, I. E., Ob	Salisbury	Smith, William Gordon,	
Robertson, J. N.,	OALR	Sharp, O. L.	Greensboro	S	Thomasville
Fayetteville		Sharpe, C. R.	Lexington	*Smith, Wm. H. (Hon.)	Goldsboro
Robertson, L. H.	Salisbury	Sharpe, F. A., ObG	Greensboro	Smoot, J. E. (Hon.)	Concord
*Robinson, C. W.	Charlotte	Sharpe, Frank L. (Hon.)	Statesville	Soady, J. H.	Asheboro
*Robinson, D. E., Pd	Burlington	Shaver, W. T., S	Albemarle	*Sorrell, F. Y.	Wadesboro
Robinson, J. D.	Wallace	*Shaw, J. A., Pd	Fayetteville	Spainhour, Ellis H. (Hon.)	
*Robinson, J. L., S	Gastonia	Shaw, L. R., GP	Statesville	GP	Winston-Salem
Rodiek, J. C., R	Winston-Salem	Shelburne, P. A.	Greensboro	*Sparrow, Thos. DeL.,	
Rogers, W. A. (Hon.)	Franklin	Shellum, O. W.	Denver	S	Charlotte
*Root, Aldert S., Pd	Raleigh	*Sherrill, H. R.	Shelby	Speas, D. C.,	
Rose, A. H. (Hon.)	GP	Sherrill, P. M.	Thomasville	GP	Winston-Salem
Smithfield		Shirley, H. C., ALR	Charlotte	*Speas, W. P. (Hon.)	
Rose, David J.	Goldsboro	Shohan, Joseph, R	Greensboro	Oph	Winston-Salem
Rose, James W., GP	Pikeville	Shuford, Jake H.	Hickory	Speed, J. A., GP	Durham
Rose, John A.,	Psy	*Shull, J. Rush, R	Charlotte	Speight, J. A.	Rocky Mount
Winston-Salem		*Sidbury, J. B., Pd	Wilmington	Spencer, F. B. (Hon.)	Salisbury
Rosenbaum, M. M., S	Shallotte	*Sigman, F. G. (Hon.)	Spencer	Spicer, Richard W.,	
*Ross, Otho B. (Hon.)	Charlotte	Sikes, C. Henry	Greensboro	Ob	Winston-Salem
*Rosser, R. G. (Hon.) Pd	Vass	Sikes, G. L. (Hon.)	GP	Spikes, N. O., GP	Durham
Rousseau, J. P.,	R	GP		*Spoon, S. C.	Burlington
Winston-Salem		Simmons, A. W., GP	Burlington	Sprinkle, C. N., GP	Weaverville
*Royal, Ben F. (Hon.)	S	Simmons, R. R.,	U	Sprunt, D. H., Path	Durham
Morehead City		Simons, C. E.	Wilson	*Sprunt, W. H., Jr.,	
Royal, D. M., GP	Salisbury	*Simmon, H. H.	Elon	S	Winston-Salem
Rovall, M. A. (Hon.)	OALR	Sinclair, L. G., S	Raleigh	*Squires, Claude B., U	Charlotte
Elkin		Singletery, G. C.	Clarkton	Staley, S. Walter. (Hon.)	
*Royster, Hubert A. (Hon.)	S			GP	Rocky Mount
Raleigh				Stanfield, W. W.	Dunn

* Present at 1942 meeting.

Name	Address	Name	Address	Name	Address
Stanford, Lois Foote, GP	Durham	*Taylor, Frank V., OALR	Murphy	Vaughan, E. W., I & A	Greensboro
Stanford, W. R.	Durham	*Taylor, G. W. (Hon.) S	Mooresville	Vaughan, J. C.	Rich Square
Stanley, John H. (Hon.) GP	Four Oaks	Taylor, J. N. (Hon.)	Greensboro	Vaughan, Roland H., GP	Edenton
Stanton, D. A. (Hon.)	High Point	Taylor, James T. (Hon.) I	Greensboro	*Vaughan, W. W., R	Durham
*Starling, H. M., S	Winston-Salem	Taylor, Rives W.	Oxford	Verdery, W. C., Pd	Fayetteville
Starling, W. P., GP	Roseboro	Taylor, S. R., OALR	Greensboro	Verner, Carl Hugh, Pd	Forest City
Starr, H. F.	Greensboro	*Taylor, V. W., Jr.	Winston-Salem	*Vernon, James W., Psy	Morganton
Staton, L. R.	Hayesville	Taylor, W. I. (Hon.) GP	Burgaw	Vestal, W. J. (Hon.) Pd	Lexington
Stephenson, Anne L., GP	Winston-Salem	Taylor, Wesley, NP	Greensboro	Wadsworth, H. B.	New Bern
Stevens, H. W., PH	Jacksonville	Taylor, Wm. (Hon.)	Oxford	Walker, Elmer P.	Wilmington
*Stevens, Joseph B., I	Greensboro	*Teasdale, L. R.	Charlotte	Walker, E. T.	Williamston
*Stewart, Dan N.	Hickory	Templeton, J. Y., GP	Mooresville	*Walker, H. D. (Hon.)	Elizabeth City
Stimpson, R. T., PH	Raleigh	Tennent, G. S. (Hon.) Oph	Asheville	Walker, J. B.	Burlington
Stokes, Robert L.	Brevard	*Terry, J. R. (Hon.) Pd	Lexington	Walker, L. K.	Ahoskie
Stone, G. E.	King	Thacker, E. A.	Goldsboro	Walker, R. J., Jr., GP	Snow Hill
*Stone, Robert Edward	Chapel Hill	Thaxton, B. A.	Roxboro	Wall, Roger I., OALR	Raleigh
Straughan, J. W.	Warsaw	Thigpen, H. G.	Scotland Neck	*Wall, R. L., Anes.	Winston-Salem
*Street, C. A., Pd	Winston-Salem	*Thomas, C. D., Tb	Sanatorium	Wall, W. S., GP	Rocky Mount
Street, M. E. (Hon.) T	Glendon	Thomas, J. G.	Greensboro	Walters, Charles M. (Hon.)	Burlington
Street, M. E., Jr.	Glendon	*Thomas, W. C.	Winston-Salem	Walton, C. L., Ob	Glen Alpine
Stretchner, R. H., GP	Waynesville	Thomas, Wm. N., S	Oxford	Walton, G. B., GP	Chadbourn
Strickland, Arthur T.	Wilson	Thompson, A. F. (Hon.)	Troy	*Wannamaker, E. J., Jr., I	Charlotte
Strickland, E. F., (Hon.) GP	Winston-Salem	*Thompson, C. A., GP	Sparta	Ward, I. A., OALR	Hertford
Strickland, E. L., Pd	Wilson	*Thompson, C. D. (Hon.) U	High Point	*Ward, J. E. (Hon.) GP	Robersonville
Strickland, H. G.	Greensboro	*Thompson, Edg. S., I	Winston-Salem	*Ward, John LaB., P	Asheville
Stringfield, Samuel L. (Hon.) GP	Waynesville	Thompson, Hugh A., Or	Raleigh	Ward, Vernon Albert	Robersonville
Stringfield, Thomas (Hon.) GP	Waynesville	*Thompson, H. C.	Shelby	Ward, W. C.	Raleigh
*Strosnider, Charles F.	Goldsboro	Thompson, Joseph W.	Creedmoor	Ward, Walter E.	Robersonville
*Stroupe, A. U., Jr.	Mount Holly	*Thompson, S. R., U	Charlotte	Ward, W. T., GP	Raleigh
Suiter, W. G.	Weldon	Thompson, S. W.	Morehead City	*Warren, R. F.	Prospect Hill
Suitt, R. B., Psy	Asheville	Thompson, Wm. Nelson	Raleigh	Warrick, L. A.	Goldsboro
Summerlin, Harry, GP	Laurinburg	Thorpe, A. T.	Rocky Mount	Warwick, H. C.	Greensboro
*Summerville, W. M., GP	Charlotte	Thurston, Asa, GP	Taylorville	Washburn, B. E., PH	Rutherfordton
Sumner, Emmett A., S	High Point	*Tice, W. T.	High Point	Watkins, F. B. (Hon.) Psy	Morganton
Sumner, G. H., PH	Asheboro	Tillery, J. G., GP	Wilson	Watkins, G. T., Jr., GP	Durham
Sumner, T. W.	Hendersonville	*Todd, L. C., CP	Charlotte	Watkins, John A.	Asheville
Sutton, Carl W. (Hon.)	Richlands	Townsend, M. L.	Society Hill, S. C.	Watkins, W. M., GP	Durham
Sutton, William G. (Hon.)	Seven Springs	Townsend, R. G., GP	St. Pauls	Watson, H. A.	Greensboro
*Swann, Jos. F. (Hon.)	Kannapolis	Triplett, W. R.	Purlear	Watson, James, Psy	Raleigh
Sweaney, H. M., S	Durham	Trotter, Fred O., GP	Hendersonville	Watson, Paul S.	Madison
Swindell, Lewis H.	Washington	Troutman, B. S.	Lenoir	Watson, S. P., OALR	New Bern
Sykes, C. L., GP	Pilot Mountain	Troxler, R. M.	Burlington	*Watson, Thomas M., Pd	Greenville
Sykes, J. V.	Rocky Mount	*Tucker, Earl Van	Grifton	Way, Samuel Eason, S	Rocky Mount
*Sykes, R. P.	Asheboro	*Tugele, Alan	Charlotte	Weathers, B. G.	Stanley
Symington, John, PH	Carthage	Turlington, W. T., Jr.	Jacksonville	Weathers, Bahnsou, S	Roanoke Rapids
*Tally, B. T., GP	Albemarle	Turner, H. G., S	Raleigh	Weathers, R. R., GP	Knightdale
Talley, J. S., GP	Troutmans	Turrentine, K. P., I	Kinston	Weaver, W. J. (Hon.) Pr	Asheville
*Tankersley, J. W. (Hon.) S	Greensboro	Tuttle, A. F. (Hon.)	Spray	*Webb, Alexander, Jr., S	Raleigh
Tart, Baston I., Jr.	Goldsboro	*Tuttle, M. S., GP	Kannapolis	Webb, W. P. (Hon.) GP	Rockingham
Tate, W. C. (Hon.) S	Banner Elk	*Tuttle, R. G.	Winston-Salem	Webster, N. M., Ob	Winston-Salem
Taylor, John Cotton, Ob	Washington	Tydemann, F. W. L.	San Francisco, Cal.	Weddington, J. L., GP	Hendersonville
*Taylor, Joshua II, S	Washington	Tyler, E. R., D	Durham	Weinstein, R. L., GP	Fairmont
*Taylor, A. D.	Charlotte	*Tyner, Carl V., S	Leaksville	Weiters, John C.	Bryson City
Taylor, B. C.	Mount Holly	Tyson, T. D. (Hon.)	Mebane	Weizenblatt, Sprinza, Oph	Asheville
Taylor, E. H. E., P	Morganton	Tyson, Thomas D., Jr.	ObG	*Welton, David G.	Charlotte
*Taylor, F. R., I	High Point	Ulloth, G.	High Point		

Wessell, John C. (Hon.)	Wilmington	Wilkins, R. B., OALR	Durham	Wood, George T., S.	High Point
West, B. C., Pd.	Kinston	Wilkins, S. A. (Hon.)	Dallas	Wood, H. E., Tb.	Black Mountain
West, C. F., GP.	Kinston	Wilkinson, L. L.	Rutherfordton	*Wood, Martha	Marion
West, Louis N., OALR	Raleigh	Wilkinson, R. W., Jr.	Wake Forest	*Woodard, A. G. (Hon.)	OALR Goldsboro
Westcott, W. E., S.	Candler	Willcox, J. W. (Hon.)	T West End	Woodard, C. A. (Hon.)	S Wilson
Whaley, James D., U.	Hickory	Williams, Albert F. (Hon.)	Wilson	Woodhall, Barnes, NS.	Durham
*Wharton, Watson, GP	Smithfield	Williams, Edward J.	Monroe	*Woodson, Charles W. (Hon.)	Salisbury
Wheeler, J. H.	Henderson	Williams, J. D., Jr.	Stokesdale	Wooten, Floyd P.	Kinston
Whelpley, Frank L., Psy	Goldsboro	Williams, John D. (Hon.)	Guilford Station	Wooten, W. I., S.	Greenville
Whichard, M. P., PH.	Murphy	Williams, J. H., PH.	Clinton	Worley, J. H.	Asheville
*Whicker, Guy L.	Kannapolis	Williams, J. M.	Watauga	Wrenn, Grover C., GP	Siler City
*Whisnant, Albert M. (Hon.)	OALR Charlotte	*Williams, J. R., Jr.	I Winston-Salem	Wright, J. B. (Hon.)	ALR Raleigh
Whitaker, F. C.	Enfield	Williams, L. L.	Spruce Pine	Wright, John J.	Chapel Hill
Whitaker, J. Allen	Rocky Mount	Williams, L. P.	Edenton	Wright, James R.	OALR Raleigh
*Whitaker, Paul F., I.	Kinston	Williams, R. T.	Farmville	*Wright, O. E.	Winston-Salem
Whitaker, R. B., GP	Whiteville	Williams, William N., GP	Tabor City	Wyatt, Wortham, D.	Winston-Salem
Whitaker, R. H., GP	Kernersville	Williamson, Ross M.	Tabor City	Wylie, W. deK., J.	Winston-Salem
White, C. H., Oph.	Henderson	Willis, A. P. (Hon.)	Candler	Yarborough, Frank R., ALR	Cary
White, Eustace	Kannapolis	Willis, B. C., S.	Rocky Mount	Yarborough, R. F. (Hon.)	PH Louisburg
*White, F. W. M.	Halifax	*Willis, C. A., Jr.	Candler	Yates, R. F., GP	Clayton
White, R. A., Ob.	Asheville	Willis, H. C.	Wilson	Yoder, Paul A., Tb	Winston-Salem
White, W. H. C., S	Elizabeth City	Willis, W. H.	Goldsboro	*York, A. A. (Hon.)	High Point
*Whitehead, S. L., S	Asheville	Wilson, Frank, Jr., S.	Raleigh	Young, G. McD.	Postell
Whitfield, B. W., GP	Murphy	Wilson, Newton G.	Madison	Young, J. C., U.	Asheville
*Whittington, C. T., S.	Greensboro	Wilson, R. B.	Asheville	Young, J. E.	Greensboro
*Whittington, James B. (Hon.)	S Winston-Salem	Wilson, S. Glenn	Angier	*Young, Robert F., PH	Halifax
Whittington, Wm. W. (Hon.)	GP Snow Hill	*Winkler, Harry, Or.	Charlotte	Yow, D. E.	Concord
Wilkerson, Annie Louise, GP	Raleigh	Winstead, Ellis G.	Belhaven	Yow, I. A. (Hon.)	Concord
Wilkerson, Charles B. (Hon.)	S Raleigh	*Winstead, J. L., S.	Greenville	Zealy, A. H., Jr.	Goldsboro
Wilkerson, J. B.	Brevard	Winstoh, P. H.	Clarksville, Va.	Zimmerman, Robert U. (Hon.)	Welcome
*Wilkes, M. B., GP	Laurinburg	Wiseman, P. H.	Avondale		
Wilkins, J. C.	Haw River	*Wolfe, H. C., OALR	Greensboro		
		Wolfe, R. V., GP	Winston-Salem		
		*Wood, Frank, S.	Marion		

FELLOWS IN THE SERVICE

As far as possible we have listed the names of all fellows in any of the Services. We realize, however, that some names have not yet been reported to the Secretary's office and will appreciate being

advised of name and address of any doctor not included. We have not indicated rank or service because information has not been complete in regard to some.

Name	Address	County Society
Andes, T. E., S	Leaksville	Rockingham
Armistead, D. B., I	Greenville	Pitt
Arnold, Ralph A.	Durham	Durham-Orange
Aycock, E. Burtis	Greenville	Pitt
Benbow, Edgar	Winston-Salem	Forsyth
Bender, John J., GP	Red Springs	Robeson
Benson, N. O., U.	Lumberton	Robeson
Benton, George R.	Goldsboro	Wayne
Biggs, J. I., ObG	Lumberton	Robeson
Black, Paul A. L.	Wilmington	New Hanover
Bland, Charles A.	Forest City	Rutherford
Bolus, Michael, D.	Raleigh	Wake
Bradford, G. E.	Winston-Salem	Forsyth
Brewton, W. A.	Enka	Buncombe
Bridges, D. T.	Lattimore	Cleveland
Britt, C. S., Ob	Beaufort, S. C.	Mecklenburg
Brooks, E. Bruce	Winston-Salem	Forsyth
Brown, Clark E.	Chapel Hill	Durham-Orange
*Brown, J. S., Jr.	Hendersonville	Henderson
*Brown, W. M. B., ALR	Greenville	Pitt
Brunson, E. P., S	Albemarle	Stanly
Bumgarner, John (Reported lost in action in Pacific)	North Wilkesboro	Wilkes-Alleghany
*Bunch, Charles, S	Charlotte	Mecklenburg

Name	Address	County	Society
Byerly, J. H., GP	Sanford	Lee	
Byrnes, Thomas H.	Charlotte	Mecklenburg	
Calder, Duncan	Concord	Cabarrus	
Cannon, Eugene B.	Asheboro	Randolph	
Carlyle, J. B.	Burlington	Alamance-Caswell	
Cekada, Emil Bogonir	Durham	Durham-Orange	
Chiles, George C., S.	Sanford	Lee	
Cornell, W. S.	Charlotte	Mecklenburg	
Cox, A. M.	Madison	Rockingham	
Cox, S. C., GP	Kerr	Sampson	
Craig, Robert Lawrence, N.	Durham	Durham-Orange	
Craven, Thomas W.	Huntersville	Mecklenburg	
Cree, Maurie B., S.	Concord	Cabarrus	
Crispell, R. S., NPsy	Durham	Durham-Orange	
Croom, R. D., Jr.	Maxton	Robeson	
Currie, D. S., Jr.	Fayetteville	Cumberland	
Davis, J. P.	Winston-Salem	Forsyth	
Dawson, A. Ray	Greensboro	Guilford	
DeCamp, Allen Ledyard, ObG	Fayetteville	Cumberland	
Denholm, J. S.	Burlington	Alamance-Caswell	
Deyton, John W.	Asheville	Buncombe	
Dougherty, J. H., U.	Asheville	Buncombe	
Elfman, Samuel L., GP	Fayetteville	Cumberland	
Erickson, C. C.	Durham	Durham-Orange	
Fenner, Edwin F. (Hon.)	Henderson	Vance	
Fields, James A.	Raleigh	Wake	
Fleming, L. E., S.	Charlotte	Mecklenburg	
Fleming, R. G., GP	Durham	Durham-Orange	
Floyd, A. G., GP	Whiteville	Columbus	
Flythe, W. H., GP	High Point	Guilford	
Fox, N. A., GP	Greensboro	Guilford	
*Frazier, J. W.	Salisbury	Rowan-Davie	
Furgurson, E. W.	Plymouth	Martin-Washington-Tyrrell	
*Gardner, C. E., Jr., S.	Durham	Durham-Orange	
Garrard, Robert L.	Greensboro	Guilford	
Garrenton, Connell, GP	Bethel	Pitt	
Gay, Charles H.	Charlotte	Mecklenburg	
Glasser, John W. H.	Graham	Alamance-Caswell	
Goley, Willard Coe	Graham	Alamance-Caswell	
*Haar, F. B., Pd	Greenville	Pitt	
Hall, Edgar M., Jr.	Raleigh	Wake	
Hammond, A. F.	Grifton	Pitt	
Hamrick, John	Shelby	Cleveland	
Hardin, Parker C., S.	Monroe	Union	
Harris, Isaac E., Jr., S.	Durham	Durham-Orange	
Hart, O. J., U.	Winston-Salem	Forsyth	
Hartman, B. H.	Asheville	Buncombe	
Hawes, Aubrey	Charlotte	Mecklenburg	
Hawes, J. B., OALR	Greenville	Pitt	
Heinitsh, George	Fayetteville	Cumberland	
Helsabeck, B. A.	Winston-Salem	Forsyth	
Herring, Tilghman	Wilson	Wilson	
Hill, A. L.	Kings Mountain	Cleveland	
Hitch, Joseph, D.	Raleigh	Wake	
Holbrook, J. Samuel, GP	Statesville	Irccell-Alexander	
Jervey, William St. J.	Tryon	Polk	
Johnson, J. R.	Dunn	Harnett	
Jones, O. H., Ob	Charlotte	Mecklenburg	
Jones, Thomas T., GP	Durham	Durham-Orange	
Kendall, John H.	Richlands	Onslow	
Kennedy, L. T., PH	Winston-Salem	Forsyth	
Killian, Frank M.	Franklin		
Knoefel, A. E., Jr., GP	Black Mountain	Buncombe	
Lackey, R. Howard	Fayetteville	Cumberland	
*Lackey, W. J.	Fallston	Cleveland	
Lancaster, N. F., GP	Waynesville	Haywood	
Lawson, G. W.	Graham	Alamance-Caswell	
Lewis, W. G.	Stokesdale	Guilford	
Lihn, Henry, GP	Fairmont	Robeson	
Lore, Ralph E.	Lenoir	Caldwell	
McRae, J. D., R.	Asheville	Buncombe	
Manning, I. H., Jr., I.	Durham	Durham-Orange	
Martin, B. F., GP	Winston-Salem	Forsyth	

<i>Name</i>	<i>Address</i>	<i>County Society</i>
Matthews, William C.	Davidson	Mecklenburg
Mauzy, Charles H., Jr., Ob.	Winston-Salem	Forsyth
May, W. P., GP	Winston-Salem	Forsyth
McCracken, Joseph P.	Durham	Durham-Orange
McCutcheon, W. B., S	Durham	Durham-Orange
*McGrath, F. B., GP	Lumberton	Robeson
McLaughlin, C. S., Jr.	Charlotte	Mecklenburg
McLeod, N. H., GP	Raleigh	Wake
*McNeill, James H., I	North Wilkesboro	Wilkes-Alleghany
Mickley, Jack, GP	Tabor City	Columbus
Montgomery, J. C., Anes	Charlotte	Mecklenburg
Moore, Ernest Vick	Earl	Cleveland
Moore, Henry Blanchard	Graham	Alamance-Caswell
Moore, Roy H., GP	Canton	Haywood
Munroe, H. Stokes, Jr., S	Charlotte	Mecklenburg
*Naumoff, Philip	Charlotte	Mecklenburg
Nordleet, C. M., Jr.	Winston-Salem	Forsyth
Norton, J. W. Roy, PH	Chapel Hill	Durham-Orange
Patterson, Fred G., GP	Chapel Hill	Durham-Orange
Pearse, Richard L., ObG	Durham	Durham-Orange
Pearson, E. L.	Durham	Durham-Orange
Peters, David B.	Raleigh	Wake
*Pitts, Wm. R., NS	Charlotte	Mecklenburg
Plummer, D. E., PH	Durham	Durham-Orange
Pollack, David, GP	Hobgood	Halifax
Propst, James H.	Graham	Alamance-Caswell
Query, R. Z., Jr.	Charlotte	Mecklenburg
Rand, E. G.	Raleigh	Wake
Reque, Paul	Durham	Durham-Orange
Roberts, Louis C., U	Durham	Durham-Orange
Robertson, C. B.	Jackson	Halifax
Rodman, R. B., A	Wilmington	New Hanover
Rogers, Gaston W., PH	Chapel Hill	Chatham
Rollins, C. D.	Henderson	Vance
Rollins, Vance B.	Henderson	Vance
Roper, W. H., Tb	Sanatorium	Hoke
Ross, Robert A., ObG	Durham	Durham-Orange
Ross, T. W.	Charlotte	Mecklenburg
Royster, Chauncey L.	Raleigh	Wake
Ruark, R. J., ObG	Raleigh	Wake
Rude, Joe C.	Durham	Durham-Orange
Ruffin, D. W., GP	Pink Hill	Lenoir
Sanger, P. W.	Charlotte	Mecklenburg
Schulze, William	Durham	Durham-Orange
Sinclair, R. T.	Whiteville	Columbus
Sloan, William S., I	Wilson	Wilson
Smith, D. W., GP	Waynesville	Haywood
Smith, E. B.	Elizabeth City	Pasquotank-Camden-Currituck-Dare
*Smith, O. Norris, I	Greensboro	Guilford
Smith, R. C.	Ayden	Pitt
Smith, R. E.	Mt. Airy	Surry-Yadkin
Sowers, R. G.	Jonesboro	Lee
Stenhouse, Henry M., Oph	Goldsboro	Wayne
Stephenson, Bennett E., GP	Welden	Halifax
Stringfield, Thomas, Jr., GP	Waynesville	Haywood
Stutz, M. Greer	Southern Pines	Moore
Sullivan, D. J., NPsy.	Asheville	Buncombe
Sullivan, Victor T., GP	Wilmington	New Hanover
*Tatum, Roy C.	Statesville	Iredell-Alexander
Taylor, Charles W.	Hollister	Pitt
Taylor, Thomas J.	Roanoke Rapids	Halifax
Temple, R. Henry	Kinston	Lenoir
Thomas, W. C., GP	Siler City	Chatham
Thomas, Walter Lee, ObG	Durham	Durham-Orange
Thornhill, E. Hale	Durham	Durham-Orange
Tyndall, R. G., S	Kinston	Lenoir
Tyson, J. J.	Ayden	Pitt
Tyson, Woodrow W.	Mebane	Alamance-Caswell
Ward, Needham E., G	Greenville	Pitt
Washburn, C. Y., GP	Mooresboro	Cleveland
Weinstein, M. H., GP	Fairmont	Robeson
Westmoreland, J. R.	Canton	Haywood
Whicker, Max E.	China Grove	Rowan-Davie

Name	County Society	Address
White, Thomas Preston, I.....	Charlotte	Mecklenburg
Williams, Charles F.....	Raleigh	Wake
Williams, McChord, GS.....	Charlotte	Mecklenburg
Wilson, S. A.....	Lincolnton	Lincoln
Wisely, M. R.....	Edenton	Chowan-Perquimans
Woody, J. W. A.....	Tryon	Polk
Wyatt, A. T.....	Lillington	Harnett

ROSTER OF FELLOWS FOR 1942

By Counties

NOTE. Every physician in the state whose name we could not secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of this opportunity. Any-one finding an error should report it to the Secretary of the Society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	Licensed	Joined State Society
President: *Harper, F. T., Graham; Med. Coll. of Va., 1934	1934	1936
Secretary: Greene, Phares Yates, Graham; Northwestern Univ., 1932..	1932	1934
Anderson, Charles Alexander, Burlington, (Hon.); Coll. P. & S., Balt., 1893	1893	1896
Bell, F. O., Burlington; Atlanta Med. Coll., 1918	1921	1928
Braddy, W. H., Burlington; Univ. of N. C., 1909	1909	1913
Brooks, R. E., Burlington; Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Carlyle, J. B., Burlington; Jeff. Med. Coll. 1926; U. N. C.; Wake Forest 1924	1926	1928
Carrington, Geo. L., Burlington; Johns Hopkins, 1920; U.N.C.	1920	1925
Cook, W. E., Mebane; Washington Univ., 1930	1930	1934
Denholm, J. S., Burlington; Duke Univ., 1935	1937	1938
Ellington, A. J., Burlington; Columbia Univ., 1915; Wake Forest	1915	1917
Glasser, John W. H., Graham; Johns Hopkins, 1937	1940	1942
Goley, Willard Coe, Graham; Univ. of Pa., 1924	1924	1926
Gwyn, H. L., Yanceyville; Med. Coll. of Va., 1923	1923	1925
Harden, Boyd, Burlington; Univ. of Pa. 1928	1931	1931
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Johnson, Joseph L., Graham; Jeff. Med. Coll., 1926	1926	1930
Lawson, George William, Graham; Long Island Coll. of Med., 1935	1935	1938
Lupton, C. C., Burlington; Temple Univ., 1931; U.N.C.	1931	1934
Lunton, E. S., Graham; N. Y. U. Sch. of Med., 1938	1938	1940
Malloy, S. A., Yanceyville (Hon.); Ky. School of Med., 1897	1898	1903
McDade, B. B., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
McLamb, George Thomas, Mebane; Univ. of Tenn.		1942
McPherson, C. W. (Hon.), Burlington; Univ. of Md., 1910; U.N.C.	1910	1912
McPherson, R. G. (Hon.) Saxapahaw; Univ. of N. C., 1908	1908	1909
Montgomery, Harry M., Burlington (Hon.); N. C. Med. Coll., 1903	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll., 1920; Wake Forest	1920	1923
Pickett, John A., Burlington (Hon.); Univ. of Tenn. Coll. of Med., 1894	1894	1904
Propst, James H., Graham; Univ. of Pa., 1938	1939	1942
Robinson, D. E., Burlington; Harvard Med. Coll. 1927	1929	1930
Scott, S. F., Union Ridge; Univ. of Pa., 1918; U.N.C.	1918	1920
Simmons, A. W., Burlington; Jeff. Med. Coll. 1939	1939	1940
Simpson, H. H., Elon; Univ. of Md., 1925	1925	1926
Smith, F. L., Burlington; Univ. of Pittsburgh, 1927	1927	1928
Spoon, S. C., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane (Hon.); Univ. Coll. of Med., Va., 1899	1899	1904
Tyson, Woodrow W., Mebane; Med. Coll. of Va., 1935	1935	1938
Walker, J. B., Burlington; Med. Coll. of Va., 1914; U. N. C.	1914	1916
Walters, Charles Manley, Burlington (Hon.); Univ. of Md. and Coll. of P. & S., Balt., 1908; U.N.C.	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1920
Wilkins, J. C., Haw River; Univ. of Md., 1911; U.N.C.	1911	1920

* Elected to replace Dr. W. W. Tyson, who was called into Military Service.

ALEXANDER—SEE IREDELL-ALEXANDER

ALLEGHANY—SEE WILKES-ALLEGHANY

ANSON COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Sorrell, F. Y., Wadesboro; Jeff. Med. Coll., 1930; Wake Forest	1930	1933
Secretary: Kress, J. H., Wadesboro; Med. Coll. of Va., 1936	1938	1939
Allen, Chas. I., Wadesboro; Col. Univ. Coll. of P. & S., 1913; Wake Forest, 1911	1913	1922
Bennett, Jos. H., Wadesboro (Hon.); Univ. of Md., 1894	1894	1904
Carter, W. D., Morven; S. C. Med. Coll., 1934	1935	1936
Covington, J. M., Jr., Wadesboro; Duke Univ., 1938	1940	1942
Davis, J. M., Wadesboro; Columbia Univ., 1913; Wake Forest	1913	1920
Kress, Esta L., Wadesboro; Med. Coll. of Va., 1935	1938	1939
Ulloth, G., Ansonville; Col. of Med. Evans., 1932	1939	1941

ASHE—SEE WATAUGA-ASHE

AVERY COUNTY SOCIETY

President: Fink, Emma S., Crossnore; Vanderbilt, 1936	1938	1938
Secretary: Brown, J. A., Banner Elk; Tulane 1934; U. N. C.	1934	1938
Burleson, W. B., Plumtree; Univ. of Md., 1915; U.N.C.	1915	1916
Eckhart, W. F., Crossnore; Duke Univ., 1939	1941	1942
Sloop, Eustace H., Crossnore (Hon.); N. C. Med. Coll., 1905; Jeff. Med. Coll., 1908	1905	1907
Tate, W. C., Banner Elk; Tenn. Med. Coll., 1908	1909	1912

BEAUFORT COUNTY SOCIETY

President: Peters, August R., Washington; Univ. of Georgia, 1935	1938	1939
Secretary: Underwood, M. K., Belhaven; Med. Coll. of Va., 1937	1937	1939
Baxley, R. D., Washington; Rush Med. Coll., 1940	1941	1942
Bonner, J. B., Aurora; Univ. of Md.; Coll. of P. & S., 1918; U.N.C.	1918	1920
Carter, H. W. (Hon.), Washington; Univ. of Va., 1895	1895	1910
Ford, D. E., Washington; Univ. of Mich., 1908	1924	1925
Hackler, R. H., Washington; Jeff. Med. Coll., 1926	1926	1928
Mariner, N. B., Belhaven (Hon.); Univ. Coll. of Med., Va., 1903	1903	1904
Nicholson, P. A., Washington (Hon.); P. & S., Balt., 1889	1889	1890
Ramsey, Jas. G., Washington; Univ. of Pa., 1922; U.N.C.	1924	1924
Swindell, L. H., Washington; Univ. of Pa., 1916; U. N. C.	1916	1919
Tayloe, John Cotton, Washington; Univ. of Pa., 1922; U.N.C.	1924	1925
Tayloe, Joshua, II, Washington; Univ. of Pa., 1923; U.N.C.	1923	1926
Winstead, Ellis G., Belhaven; Med. Coll. of Va., 1929	1929	1930

BERTIE COUNTY SOCIETY

President:		
Secretary: Jordan, W. P., Windsor; Univ. of Md., 1935	1935	1939
Castelloe, Cola, Windsor; Univ. of Pa., 1917; U.N.C.	1917	1926
Chamblee, John S., Windsor; Emory Univ., 1938	1938	1942
Credle, C. S., Colerain; Med. Coll. of Va., 1932	1932	1941
Garriss, F. H., Lewiston; Jeff. Med. Coll., 1912	1912	1918
Norfleet, Edgar Powell, Roxobel; Med. Coll. of Va., 1914	1914	1920
Saunders, Sheldon A., Aulander; Jeff. Med. Coll., 1914	1914	1918
Smith, Joseph Elmer, Windsor; Med. Coll. of Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

President: Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Secretary: Glenn, Channing, Elizabethtown; Med. Coll. of Va., 1933	1936	1939
Bennett, E. C., Elizabethtown; Med. Coll. of Va., 1926	1926	1927
Bridger, D. H., Bladenboro; Jeff. Med. Coll., 1922	1922	1925
Cromartie, R. S., Elizabethtown (Hon.); N. C. Med. Coll., 1900	1900	1906
Hutchinson, S. S., Bladenboro; N. C. Med. Coll., 1911	1911	1917
Singletery, G. C., Clarkton; Univ. of Pa., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

BUNCOMBE COUNTY SOCIETY

President: Murphy, Gibbons W., Asheville; Emory Univ., 1923	1923	1927
Secretary: Carr, Eugene M., Asheville; Johns Hopkins Univ., 1919 ..	1926	1927
Archer, Isaac J., Black Mountain (Hon.); Northwestern Univ., 1896 ..	1905	1907
Armentrout, Charles H., Asheville; Med. Coll. of Va., 1931	1940	1941
Baier, George F., Jr., Asheville; Hahnemann Med. Coll., 1906	1920	1930
Beall, L. G., Black Mountain (Hon.); N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1906

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Belcher, C. C., Asheville; Tulane, 1930.....	1939	1940
Bell, L. Nelson, Swannanoa; Med. Coll. of Va., 1916.....	1941	1942
Bittinger, S. M., Black Mountain; George Washington Univ., 1918.....	1924	1924
Brewton, W. A., Enka; Univ. of Pa., 1927.....	1927	1929
Briggs, Henry H., Asheville; Yale, 1931.....	1933	1934
Brookshire, Harley G., Asheville (Hon.); N. C. Med. Coll., 1905.....	1905	1906
Brown, Kermit E., Asheville; Jeff. Med. Coll., 1927.....	1927	1930
Brownsberger, Ethel, Biltmore; Coll. of Med. Evangelists, 1927.....	1933	1934
Brownsberger, John F., Fletcher; Coll. of Med. Evangelists, 1925.....	1928	1929
Buckner, J. M. (Hon.), Swannanoa; Univ. of N. C., 1909.....	1909	1912
Burton, C. N., Asheville; Univ. of Cincinnati, 1936.....	1938	1938
Chapman, E. J., Asheville; Northwestern Univ., 1928.....	1939	1940
Cherry, J. H., Asheville; Duke Univ., 1933.....	1939	1941
Clark, Harold S., Asheville; Univ. of Pa., 1922; U.N.C.....	1922	1924
Cocke, Charles Hartwell, Asheville; Cornell Univ., 1905.....	1912	1913
Cocke, Jere E., Asheville (Hon.); Louisville Med. Coll., 1905.....	1905	1906
Cooley, S. S., Black Mountain; Univ. of Bellevue Hosp., N. Y. City, 1934.....	1934	1938
Craddock, Alva B., Asheville; Johns Hopkins, 1918.....	1923	1924
Croom, Gabe H., Asheville; N. C. Med. Coll., 1909.....	1909	1916
Crow, S. L., Asheville; Emory Univ., 1925.....	1926	1927
Crump, C. L., Asheville; Baylor Univ., 1930.....	1935	1936
Crump, Curtis, Asheville; Harvard, 1926.....	1933	1934
Deyton, John W., Asheville; Rush Med. Coll., 1928.....	1930	1931
Dougherty, J. H., Asheville; N. Y. Univ., 1934.....	1936	1937
Eckel, O. F., Asheville (Hon.); Med. Coll. of S. C., 1906.....	1907	1908
Edwards, B. O., Asheville (Hon.); N. C. Med. Coll., 1905.....	1905	1909
Elias, Lewis W., Asheville (Hon.); Columbia Univ., Coll. of P. & S., 1903.....	1906	1906
Feldman, Leon H., Asheville; Univ. of Md., 1934.....	1938	1938
Freeman, Wm. T., Biltmore; Univ. of Ga., 1917.....	1927	1929
Gillespie, S. C., Asheville; Univ. of Cincinnati, 1931.....	1935	1936
Grantham, Wm. L., Asheville (Hon.); N. C. Med. Coll., 1906.....	1906	1908
Greene, Joseph B. (Hon.), Asheville; Univ. of Va., 1893.....	1910	1911
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917; U.N.C.....	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910.....	1910	1919
Griffith, F. Webb, (Hon.), Asheville; John Hopkins, 1906.....	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915.....	1916	1918
Hartman, B. H., Asheville; Yale, 1937.....	1941	1942
Henderson-Smathers, Irma C., Asheville; Tulane Univ., 1933.....	1934	1935
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917; Wake Forest, 1915.....	1917	1927
Herbert, Wm. P. (Hon.), Asheville; Univ. of Va., 1907.....	1910	1911
Hollyday, W. M., Asheville; Univ. of Md., 1908.....	1914	1915
Huffines, T. R., Asheville; Indiana Univ., 1919.....	1922	1924
Johnson, Walter R., Asheville; Univ. of Minnesota, 1924.....	1933	1934
Knoefel, A. E., Jr., Black Mountain; La. Univ. School of Med., 1935.....	1935	1938
Lord, Marjory J., Montreat; Univ. of Mich., 1916.....	1918	1919
Lott, Wm. Clifton, Asheville; Univ. of Colorado, 1929.....	1930	1931
MacRae, J. D., Asheville; Univ. of Pa., 1927; U.N.C.....	1927	1930
McCall, A. C., Asheville; Univ. of Md., 1910.....	1910	1914
McCall, W. H., Asheville; Med. Coll. of Va., 1938.....	1941	1941
McCracken, C. M., Fairview (Hon.); N. C. Med. Coll., 1896.....	1896	1904
McCracken, M. H., Asheville; Univ. of Louisville, 1930.....	1930	1940
McGowan, J. F., Asheville; Univ. of Md. & Coll. of Phys. & Surgs., 1929.....	1937	1939
Mears, George A., Asheville; Syracuse Univ., 1924; Wake Forest, 1922.....	1924	1927
Millender, Charles W., Asheville; Tulane Univ., 1919.....	1921	1924
Moore, Julian A., Asheville; Univ. of Pa., 1918; U.N.C.....	1918	1921
Morgan, B. E., Asheville; Univ. of Tenn., 1917.....	1921	1922
Morgan, G. A., Asheville; Univ. of Tenn., 1917.....	1920	1926
Norburn, Chas. S., Asheville; Univ. of Va., 1917; U.N.C.....	1921	1924
Norburn, R. L., Asheville; Vanderbilt Univ., 1925.....	1925	1927
Ormond, A. L., Black Mountain; Jeff. Med. Coll., 1930.....	1930	1935
Orr, Charles C., Asheville (Hon.); Univ. of Md., 1904; U.N.C.....	1904	1905
Orr, Porter B., Asheville (Hon.); Jeff. Med. Coll., 1901; U.N.C.....	1901	1904
Pearson, Arthur A., Fletcher; Coll. of Med. Evangelists, 1937.....	1939	1940
Pendleton, Wilson, Asheville; Univ. of Va., 1908.....	1919	1920
Reeves, R. J., Leicester; Vanderbilt Univ., 1913.....	1913	1922
Ringer, Paul H., Asheville (Hon.); Columbia Univ., Coll. of P. & S., N. Y., 1904.....	1906	1907
Russell, W. M., Asheville; Univ. of Cincinnati, 1928.....	1931	1932
Saunders, John T., Asheville; Columbia Univ., 1926.....	1934	1935
Schaffle, Karl, Asheville; Univ. of Pa., 1907.....	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920.....	1920	1921

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Scott, R. C., Asheville; Jefferson Med. Coll., 1902	1916	1919
Sevier, J. T., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Sisk, W. N., Asheville; Univ. of Wisc., 1935	1940	1940
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910; U.N.C.	1910	1922
Suitt, R. B., Baltimore, Md.; St. Louis Univ., 1932	1933	1938
Sullivan, D. J., Asheville; Temple Univ., 1934	1940	1940
Swann, C. C., Asheville; Tulane, 1926	1930	1931
Tennent, G. S., Asheville (Hon.); N. C. Med. Coll., 1894	1894	1898
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Watkins, John A., Asheville; Tulane Univ., 1910	1925	1926
Weaver, W. J., Asheville (Hon.); Jeff. Med. Coll., 1898; U.N.C.	1897	1903
Weizenblatt, Sprinza, Asheville; Viennese Univ. of Med., 1922	1929	1931
Westcott, W. E., Candler; Coll. of Med. Evangelists, 1926	1930	1932
White, R. A., Asheville; Univ. of Cincinnati, 1918	1920	1921
Whitehead, S. L., Asheville; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1929
Willis, A. P., Candler; (Hon.); Univ. of N. C., 1904	1904	1906
Willis, C. A., Candler; Duke Univ., 1936	1938	1938
Wilson, R. B., Asheville; Univ. of Louisville, 1931	1938	1933
Wood, H. E., Black Mountain; Emory, 1922	1938	1939
Worley, J. H., Asheville; Univ. of Tenn., 1931	1934	1935
Young, J. C., Asheville; Univ. of Tenn., 1926	1926	1929

BURKE COUNTY SOCIETY

President: McKee, John S., Jr., Morganton; Univ. of Pa., 1929	1929	1936
Secretary: Goodwin-Barbour, Edith, Morganton; Woman's Med. Coll. of Pa., 1932	1934	1934
Billings, G. M., Morganton; Tulane Univ. of Louisiana Sch. of Med., 1919	1919	1920
Ervin, John W., Morganton; Med. Coll. of Va., 1933; U.N.C.; Wake Forest	1935	1936
Hamer, A. W., Morganton; Med. Coll. of S. C., 1921	1938	1940
Helms, J. Bivens, Morganton; Univ. of Pa., 1928; Wake Forest, 1926	1928	1931
Kende, T. Norbert, Augusta, Ga.; Royal Hungarian Univ., Budapest, Hungary, 1922	1927	1928
Kendrick, Charles M., Valdese; Duke Univ., 1933	1939	1939
Kibler, W. H., Morganton; Univ. of Pa., 1914	1914	1918
Kirksey, James J., Morganton; Univ. of Pa., 1921; U.N.C.	1921	1923
McCampbell, John, Morganton (Hon.); Balt. Med. Coll., 1894	1895	1899
McLean, Allan (Hon.), Morganton; Univ. of Md., 1908	1908	1911
Oehlbeck, L. W., Morganton; Univ. of Rochester, 1930	1939	1939
Palmer, Yates, S., Valdese; Med. Coll. of Va., 1931	1931	1933
Patton, W. H., Jr., Morganton; Univ. of Pa., 1937	1937	1940
Riddle, J. B., Morganton (Hon.); Vanderbilt Univ., 1898	1904	1904
Saunders, John Rudolph, Morganton; Emory Univ., 1926; Wake Forest, 1924	1926	1931
Taylor, E. H. E., Morganton; Tulane, 1924; Wake Forest, 1922	1924	1925
Vernon, James W., Morganton; Jeff. Med. Coll., 1909; Wake Forest, 1907	1909	1913
Walton, C. L., Glen Alpine; Med. Coll. of Va., 1931	1931	1933
Watkins, Fonso B., Morganton (Hon.); Jeff. Med. Coll., 1907; U.N.C.	1907	1910

CABARRUS COUNTY SOCIETY

President: Moorefield, R. H., Kannapolis; Med. Coll. of Va., 1936	1936	1941
Secretary: Tuttle, M. S., Kannapolis; Temple Univ., 1938	1938	1940
Barnhardt, A. E., Kannapolis; Univ. of Md., 1933	1933	1941
Barrier, H. W., Concord; Chicago Medical School, 1921	1931	1942
Bowman, G. R., Kannapolis; Med. Coll. of Va., 1928	1929	1930
Brandon, W. O., Concord; Med. Coll. Va., 1928	1929	1932
Burns, J. E., Concord; Med. Coll. of Va., 1923	1923	1928
Busby, Julian, Kannapolis; Johns Hopkins, 1931	1931	1937
Calder, D. G., Jr., Concord; Univ. of Pa., 1936	1940	1940
Cree, Maurie B., Concord; Duke Univ., 1934	1939	1940
Floyd, W. Russel, Concord; Jefferson Med. Coll., 1929	1936	1938
Holton, A. J., Kannapolis; Univ. of Pa., 1933	1940	1942
Ketner, Fred Y., Concord; Med. Coll. of Va., 1928	1929	1930
King, Richard M., Concord (Hon.); Jeff. Med. Coll., 1903	1903	1906
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916

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MacFadyen, Paul R., Concord; Univ. of Va., 1929.....	1929	1932
Maulden, Paul R., Kannapolis; N. Y. Univ., 1932.....	1932	1934
Monroe, Lance T., Kannapolis; N. Y. Univ., 1932.....	1937	1938
Morris, Rae H., Concord; Jeff. Med. Coll., 1929.....	1929	1932
Nance, J. E., Kannapolis;.....		1942
Nolan, J. O., Kannapolis; Jeff. Med. Coll. 1921.....	1921	1922
Smoot, J. E., Concord (Hon.); Balt. Med. Coll., 1893.....	1894	1902
Swann, Jos. F., Kannapolis (Hon.); P. & S., Balt., 1896.....	1896	1904
Whicker, Guy L., Kannapolis; Univ. of Md., 1926.....	1926	1928
White, Eustace, Kannapolis; Tulane, 1926.....	1926	1940
Yow, D. E., Concord; Temple Univ., 1935.....	1935	1937
Yow, I. A. (Hon.), Concord; N. C. Med. Coll., 1906.....	1906	1910

CALDWELL COUNTY SOCIETY

President: Kent, Alfred A., Jr., Granite Falls; Jefferson Med. Coll. 1931.....	1931	1934
Secretary: Hamer, Douglas, Jr., Lenoir; Med. Coll. of S. C., 1927; U.N.C.	1927	1930
Blackwelder, Verne H., Lenoir; Univ. of Pa., 1929; U.N.C.....	1929	1931
Byerly, Wesley Grimes, Lenoir; Med. Coll. of Va., 1924.....	1924	1925
Corpening, O. J., Granite Falls (Hon.); Univ. Coll. of Med., 1906.....	1906	1906
Dula, Frederick M., Lenoir; Vanderbilt Univ., 1932; U.N.C.....	1934	1934
Fetner, L. M., Lenoir; N. C. Med. Coll., 1914.....	1914	1938
Goodman, A. B., Lenoir (Hon.); N. C. Med. Coll., 1898.....	1897	1904
Hagaman, L. D., Lenoir; Univ. of Pa. 1936; Wake Forest.....	1936	1938
Hedrick, Clyde R., Lenoir; Georgetown Med. School, 1925; U.N.C.....	1925	1926
Hickman, H. S., Lenoir;.....		1942
Kent, Alfred A., Winter Park, Fla. (Hon.); Jeff. Med. Coll., 1885.....	1885	1894
Lore, Ralph, Lenoir; Rush Med. Coll., 1932.....	1933	1937
McNairy, Caroline, Lenoir; Woman's Med. Coll. of Pa., 1917.....	1917	1919
Rudisill, J. D., Lenoir; Univ. of Md., 1922.....	1922	1923
Russell, C. R., Granite Falls; Univ. Coll. of Med., 1909; U.N.C.....	1909	1918
Troutman, B. S., Lenoir; Univ. of Md., 1936.....	1936	1939

CAMDEN—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

CARTERET COUNTY SOCIETY

Bonner, K. P. B., Morehead City (Hon.); Med. Coll. of Va., 1905; U.N.C.	1905	1905
Chadwick, W. S., Beaufort; Med. Coll. of Va., 1928.....	1928	1930
Hyde, Frank, Beaufort; West. Res. Univ. 1920.....	1925	1926
Moore, L. W., Beaufort; Med. Coll. of Va., 1931.....	1931	1931
Royal, Ben F. (Hon.), Morehead City; Jeff. Med. Coll., 1909; U.N.C.....	1909	1912
Thompson, S. W., Morehead City; Med. Coll. of Va. 1913; U. N. C.....	1915	1922

CASWELL—SEE ALAMANCE-CASWELL

CATAWBA COUNTY SOCIETY

President: Griffin, H. W., Hickory; Emory Univ., 1923.....	1931	1932
Secretary: Hambrick, Robt. T., Hickory; Tulane, 1923; U.N.C.....	1923	1924
Barnes, H. E., Hickory; Univ. of Md., 1935.....	1935	1938
Caldwell, Lawrence, Newton; Univ. of Pa., 1932.....	1932	1934
Cloninger, K. L., Conover; Univ. of Md., 1931.....	1931	1933
Cochrane, J. D., Newton; Univ. of Md., 1912.....	1912	1923
Fresh, W. M., Hickory; Medico-Chirurgical Coll. of Phila., 1906.....	1913	1919
Fritz, William A., Hickory; Temple Univ., 1933.....	1933	1934
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921; U.N.C.....	1921	1923
Hunsucker, Chas. R., Hickory; N. C. Med. Coll., 1913.....	1913	1920
Jones, F. W., Newton; Med. Coll. of Va., 1934.....	1939	1940
Keever, James W., Hickory; Med. Coll. of Va., 1927.....	1927	1930
Klutz, A. F., Maiden; Jefferson Med. Coll., 1917.....	1917	1920
Lewis, J. S., Hickory; Med. Coll. of S. C. 1925.....	1927	1932
Long, Fred Y. (Hon.), Catawba; Baltimore & N. C. Med. Coll., 1898.....	1898	1904
Long, Glenn, Newton; N. C. Med. Coll., 1912.....	1912	1915
Menzies, H. C., Hickory (Hon.); N. C. Med. Coll., 1894.....	1894	1899
Menzies, H. H., Hickory; Med. Coll. of Va. 1923.....	1923	1926
Shuford, Jake H., Hickory; Univ. of Pa., 1936.....	1936	1942

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Stewart, Dan N., Hickory; Univ. of Pa., 1935	1935	1938
Whaley, James D., Hickory; Med. Coll. of S. C., 1925	1927	1936

CHATHAM COUNTY SOCIETY

President: Mathieson, K. M., Pittsboro; Coll. of Med. Evangelists 1937	1938	1939
Secretary: Earle, J. B., Siler City; Med. Coll. of Va., 1935	1935	1938
McBane, T. W., Pittsboro; Med. Coll. of Va., 1927	1927	1929
Patman, W. L., Siler City; Harvard, 1921	1923	1926
Rogers, G. W., Chapel Hill; Birmingham Med. Coll. 1911	1937	1941
Thomas, W. C., Siler City; Med. Coll. of Va., 1917	1917	1920
Wrenn, G. C., Siler City; Med. Coll. of S. C., 1937	1937	1939

CHEROKEE COUNTY SOCIETY

President: Miller, Harry, Murphy; Emory Univ., 1934	1936	1938
Secretary: McDuffie, James T., Murphy; College of Med. Evangelists, 1939	1939	1940
Heighway, S. C., Murphy (Hon.); Med. Coll. of Ohio, 1885	1904	1898
Hill, J. N., Murphy (Hon.); Univ. of Louisville, 1909	1909	1909
Hoover, William A., Murphy; Univ. of Md., 1933; Wake Forest	1933	1938
Morrow, W. C., Andrews; Atlanta School of Med., 1909	1909	1909
Parette, Nettie C., Robbinsville; Univ. of Tenn., 1934	1937	1941
Parette, Richard G., Andrews; Univ. of Tenn., 1934	1936	1941
Scruggs, W. H., Andrews; Univ. of Md., 1913	1915	1917
Staton, L. R., Haysville; Univ. of Md., 1929	1929	1931
Taylor, Frank V., Murphy; N. C. Med. Coll., 1915	1915	1936
Whichard, M. P., Murphy; Univ. of Md., 1910	1910	1918
Whitfield, B. W., Murphy; Tulane Univ., 1920	1920	1935
Young, G. McD., Postell; Lincoln Memorial Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

Brinn, T. P., Hertford; Univ. of Pa., 1923	1923	1927
Davenport, C. A., Hertford; Univ. of Md., 1924	1924	1926
Powell, Jesse A., Edenton (Hon.); Coll. of Phys. & Sur., Balt. 1907	1908	1909
Vaughan, Roland H., Edenton; Univ. of Va., 1935	1938	1939
Ward, I. A., Hertford; Univ. of N. C., 1907	1907	1915
Williams, L. P., Edenton; Bellevue Med. Coll. 1918	1919	1920
Wisely, Martin, Edenton; Univ. of Va., 1935	1937	1938

CLAY—SEE MACON-CLAY

CLEVELAND COUNTY SOCIETY

President: Kendall, B. H., Shelby; Univ. of Md., 1929	1929	1931
Secretary: Mitchell, Thos. B., Shelby; Univ. of Pa., 1924	1925	1927
Aydlette, Joseph P., Earl (Hon.); Univ. of Ky., 1901	1903	1903
Bridges, D. T., Lattimore, Emory Univ., 1926; Wake Forest, 1924	1926	1928
Falls, Fred, Lawndale; Tulane, 1930	1930	1933
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; Univ. of Md., 1920	1920	1922
Gold, T. B., Shelby; N. C. Med. Coll., 1911	1911	1915
Hamrick, John, Shelby; Univ. of Md., 1935	1935	1940
Hamrick, Yates, Boiling Springs; Columbia Univ., 1915	1915	1917
Harbison, J. W., Shelby; Johns Hopkins, 1919; U.N.C.	1919	1924
Hill, A. L., Kings Mountain; Univ. of Penna. 1930	1930	1932
Houser, E. A., Shelby (Hon.); Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Lackey, W. J., Fallston; Univ. of Va., 1928	1928	1929
Lattimore, E. B., Shelby (Hon.); Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence Victor, Lattimore (Hon.); Emory Univ., 1894	1897	1904
Matthews, B. B., Shelby; Med. Coll. of S. C., 1927	1927	1928
Mitchell, Z. P., Shelby; Med. Coll. of Va., 1920; Wake Forest	1920	1921
Moore, D. F., Shelby; Jeff. Med. Coll., 1925; Wake Forest, 1923	1925	1927
Moore, Ernest Vick, Earl; Med. Coll. of S. C., 1933	1933	1938
Padgett, Chas. K., Shelby; Jeff. Med. Coll., 1930	1930	1934

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Padgett, Philip C., Kings Mountain; Tulane, 1935.....	1936	1940
Parker, S. F., Shelby; Med. Coll. of Va., 1929.....	1929	1931
Pruitt, Sam. P., Shelby; Univ. of Md., 1916.....	1932	1941
Ramseur, W. L., Kings Mountain; Med. Coll. of S. C., 1926.....	1927	1929
Royster, S. S., Shelby (Hon.); Tenn. Med. Coll., 1891.....	1896	1904
Schenk, Sam. M., Shelby; Univ. of Pa., 1923; U.N.C.....	1923	1926
Sherrill, H. R., Shelby; Univ. of Tenn., 1926.....	1926	1927
Thompson, H. C., Shelby; Tulane, 1930; U.N.C.....	1931	1932
Washburn, C. Y., Mooresboro; Jeff. Med. Coll., 1937.....	1937	1939

COLUMBUS COUNTY SOCIETY

President: Greene, W. A., Whiteville; Northwestern Univ., 1934.....	1935	1936
Secretary: Miller, W. Edwin, Whiteville; Emory Univ., 1929.....	1934	1935
Cox, G. S., Tabor City; N. C. Med. Coll., 1911.....	1911	1914
Elliott, G. D., Fair Bluff; Univ. of Pa., 1923.....	1923	1926
Floyd, A. G., Whiteville; Med. Coll. of S. C., 1937.....	1937	1939
Floyd, L. D. (Hon.), Fair Bluff; N. C. Med. Coll., 1911.....	1911	1912
Formyduval, T., Whiteville; Med. Coll. of Va., 1919.....	1920	1922
Johnson, Floyd, Whiteville (Hon.); Memphis H. M. C., 1903.....	1903	1904
Mickley, Jack, Tabor City; Univ. of Md., 1932.....	1934	1937
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912.....	1912	1915
Sinclair, R. T., Whiteville; Georgetown, 1938.....	1938	1940
Smith, Slade A., Whiteville; N. C. Med. Coll., 1907.....	1907	1921
Smith, W. F. (Hon.), Chadbourne; N. C. Med. Coll., 1904.....	1904	1905
Walton, G. B., Chadbourne; Tulane Univ., 1930.....	1930	1935
Whitaker, R. B., Whiteville; Univ. Coll. of Med., 1912.....	1912	1913
Williams, William N., Tabor City; Med. Coll. of Va., 1924.....	1924	1925
Williamson, Ross M., Tabor City; Univ. of Pa., 1937.....	1937	1940

CRAVEN COUNTY SOCIETY

President:		
Secretary: Kafer, Oscar A., New Bern; Univ. of Md., 1934.....	1934	1937
Ashford, Chas. Hall, New Bern; Johns Hopkins, 1927; U. N. C., 1925....	1927	1931
Daniels, O. C., (Hon.), New Bern; Med. Coll. of Va., 1903.....	1903	1903
Duffy, Charles, New Bern; Jeff. Med. Coll. 1930.....	1930	1935
Duffy, R. N. (Hon.), New Bern; Johns Hopkins, 1906.....	1907	1908
Hollister, William, New Bern; Univ. of Md., 1922.....	1922	1942
Jones, R. Duval, New Bern (Hon.); Univ. of Md., 1896; U.N.C.....	1897	1897
McGeachy, R. S., New Bern (Hon.); Bellevue Hosp., 1894.....	1894	1895
Patterson, Joseph F., New Bern (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Pollock, Raymond, New Bern (Hon.); Jeff. Med. Coll., 1897.....	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918.....	1918	1923
Watson, S. P., New Bern; Univ. of Md., 1901.....	1901	1942

CUMBERLAND COUNTY SOCIETY

President: Elfman, Samuel L., Fayetteville; Med. Coll. of Va., 1935....	1936	1937
Secretary: McFadyen, O. L. (Hon.), Fayetteville; N. C. Med. Coll., 1912	1912	1912
Allgood, R. A., Fayetteville; Univ. of Md. & Coll. of P. & S., 1912....	1915	1917
Currie, D. S., Jr., Fayetteville; Jefferson Med. Coll., 1936.....	1936	1941
DeCamp, Allen Ledyard, Fayetteville; Univ. of Pa., 1934.....	1937	1938
Foster, M. T., Fayetteville; Emory Univ., 1927; Wake Forest, 1925....	1927	1930
Green, J. V., Fayetteville; Univ. of Ga., 1938.....	1939	1940
Harry, J. M., Fayetteville; Med. Coll. Va. 1934.....	1934	1936
Heinitsh, George, Fayetteville; Duke Univ., 1932.....	1932	1935
Highsmith, J. F., Jr., Fayetteville; Univ. of Pa., 1927.....	1927	1929
Highsmith, Seavy, Fayetteville (Hon.); Univ. Coll. of Med., 1901.....	1901	1902
Highsmith, W. C., Fayetteville; Univ. of Cincinnati, 1931; U.N.C.....	1930	1932
Kesler, R. C., Fayetteville; Tulane Univ., 1928.....	1928	1930
Lackey, R. Howard, Fayetteville.....		1940
Lilly, James M., Fayetteville (Hon.); Univ. Coll. of Med., 1903; U.N.C.	1903	1904
McFayden, Oscar L., Jr., Fayetteville; Duke Univ., 1940.....	1941	1942
McKay, W. P., Fayetteville; Tulane, 1916; U.N.C.....	1916	1921
McLeod, J. H., Fayetteville; S. C. Med. Coll., 1926.....	1929	1929
Owen, D. S. Fayetteville; Univ. of Md., 1930.....	1930	1933
Parker, W. T., Fayetteville; Med. Coll. of S. C., 1928.....	1931	1933
Pittman, R. L. (Hon.), Fayetteville; Jefferson Med. Coll., 1910.....	1910	1912
Pittman, W. A., Fayetteville; Temple Univ., 1932.....	1932	1934

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Rainey, W. T., Fayetteville; Univ. Coll. of Med., 1913.....	1913	1916
Reeves, J. L., Hope Mills; Temple Univ., 1938.....	1938	1942
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923.....	1923	1924
Shaw, J. A., Fayetteville; Univ. of Pa., 1923; U.N.C., 1921.....	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915.....	1920	1921

CURRITUCK—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DARE—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DAVIDSON COUNTY SOCIETY

President: Hunt, W. Bryce, Lexington; Univ. of Md., 1923.....	1923	1924
Secretary: Lohr, Dermot, Lexington; Jeff. Med. Coll., 1934.....	1934	1938
Alexander, G. T., Thomasville; Emory Univ., 1922.....	1933	1934
Andrew, John M., Lexington; N. Y. Univ. and Bellevue Hosp. Med. Coll., 1932.....	1932	1934
Block, M. E., Lexington; Tulane, 1933.....	1933	1937
Cathell, Jas. L., Lexington; Emory Univ., 1937.....	1937	1939
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911.....	1923	1924
Craven, Erle, Jr., Lexington; Johns Hopkins, 1929.....	1932	1935
Craven, Jean, Lexington; Johns Hopkins, 1930.....	1933	1935
Farrington, Joe, Thomasville; Univ. of Cincinnati, 1939.....	1939	1941
Farrington, R. K., Thomasville; Univ. of Cincinnati, 1925; U.N.C.....	1925	1927
Gambrell, Grover C., Lexington; Univ. of Ga., 1912.....	1923	1924
Griffis, J. W., Denton; Med. Coll. of Va., 1932.....	1934	1937
Jennings, R. G., Thomasville; N. C. Med. Coll., 1913.....	1913	1920
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922; Wake Forest, 1920.....	1922	1924
Lanier, V. C., Welcome; Med. Coll. of Va., 1937.....	1937	1939
Leonard, J. C., Jr., Lexington; Jeff. Med. Coll., 1928.....	1928	1931
McDonald, R. L., Thomasville; Northwestern Univ., 1936.....	1937	1938
Mock, Frank Lowe; Lexington (Hon.); N. C. Med. Coll., 1908.....	1908	1908
Myers, H. T., Lexington; Med. Coll. of Va., 1935.....	1935	1940
Phillips, C. H., Thomasville (Hon.); Balt. Univ. School of Med., 1892.....	1893	1911
Redwine, J. Dan, Lexington; Emory Univ., 1931.....	1931	1934
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914; Wake Forest, 1912.....	1914	1917
Sherrill, P. M., Thomasville; Vanderbilt Univ., 1931.....	1935	1937
Smith, J. A., Lexington; N. C. Med. Coll., 1915.....	1915	1917
Smith, William Gordon, Thomasville; Tulane, 1927; U.N.C.....	1927	1928
Terry, J. R. (Hon.), Lexington; Univ. of Louisville, 1911.....	1912	1912
Vestal, Willis Jasper, Lexington (Hon.); Coll. of P. & S., Balt., 1883.....	1889	1893
Zimmerman, Robert U., Welcome (Hon.); N. C. Med. Coll., 1901.....	1901	1904

DAVIE—SEE ROWAN-DAVIE

DUPLIN COUNTY SOCIETY

President: Hundley, Deane, Jr., Wallace; Boston Med. Coll., 1934.....	1936	1938
Secretary: Lineberry, John A., Kenansville; Univ. of Pa., 1938.....	1938	1940
Ewers, Edwin P., Warsaw; Med. Coll. of Va., 1935.....	1936	1939
Farrior, J. W., Warsaw; Univ. of Pa., 1912.....	1913	1917
Gooding, Guy V., Kenansville; Tulane Univ., 1928.....	1928	1931
Ilawes, C. F., Rose Hill; Northwestern Univ., 1933.....	1932	1939
Kennedy, G. W., Beulaville;.....	.....	1942
Norris, F. L., Beulaville; Univ. of Oklahoma, 1936.....	1937	1942
Quinn, Robert F., Magnolia; N. C. Med. Coll., 1912.....	1913	1916
Robinson, J. D., Wallace; Univ. of Md., 1915.....	1915	1917
Straughan, J. W., Warsaw; Med. Coll. of Va., 1924.....	1924	1925
Williams, J. M., Warsaw; Univ. of Md., 1902.....	1902	1902

DURHAM-ORANGE COUNTIES SOCIETY

President: Jones, Thomas T., Durham; Johns Hopkins, 1932.....	1934	1935
Secretary: Ferguson, George Burton, Durham; Jefferson Med. Coll., 1932.....	1937	1938
Alyea, Edwin P., Durham; Johns Hopkins, 1923.....	1930	1930
Anderson, W. B., Durham; Johns Hopkins, 1924.....	1927	1928

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Arena, J. M., Durham; Duke Univ., 1932.....	1938	1939
Arnold, Ralph A., Durham; Buffalo, 1936.....	1941	1941
Baker, Lenox D., Durham; Duke Univ., 1933.....	1937	1937
Baker, R. D., Durham; Harvard Univ., 1928.....	1984	1937
Baylin, George Jay, Durham; Duke Univ., 1937.....	1941	1942
Berryhill, Walter Reece, Chapel Hill; Harvard Univ., 1927; U.N.C.....	1928	1934
Bitting, Numa Duncan, Durham (Hon.); Jeff. Med. Coll., 1907; U.N.C.....	1907	1909
Boone, W. H., Durham (Hon.); N. C. Med. Coll., 1902.....	1902	1904
Boone, W. W., Durham; Jeff. Med. Coll., 1923; U.N.C.....	1923	1925
Bowles, Francis N., Durham; Med. Coll. of Va., 1924.....	1924	1926
Bowling, Edwin Holt, Durham (Hon.); Coll. of P. & S., Balt., 1891.....	1890	1908
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919; U.N.C.....	1919	1923
Brown, Clark E., Chapel Hill; Univ. of Pa., 1930.....	1940	1941
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897.....	1914	1915
Callaway, J. Lamar, Durham; Duke Univ., 1932.....	1937	1937
Carroll, R. C., Durham; Univ. of Colorado, 1939.....	1941	1941
Carter, Bayard, Durham; Johns Hopkins, 1925.....	1925	1931
Cekada, Emil Bogonir, Durham; Johns Hopkins, 1929.....	1934	1934
Cooper, A. Derwin, Durham; Geo. Washington Univ., 1931.....	1933	1934
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918; U.N.C.....	1919	1920
Craig, Robert Lawrence, Durham; Johns Hopkins, 1935.....	1939	1940
Crispell, R. S., Durham; Cornell Univ., 1920.....	1933	1934
Darden, O. B., Richmond, Va.; Med. Coll. of Va., 1918.....	1920	1920
Davison, Wilburt C., Durham; Johns Hopkins, 1917.....	1927	1928
Dees, John Essary, Durham; Univ. of Va., 1933.....	1940	1940
Dees, Susan Coons, Durham; Johns Hopkins, 1935.....	1939	1941
Dick, MacDonald, Durham; Johns Hopkins, 1928.....	1940	1941
Donnelly, Grant Lester, Chapel Hill; Duke Univ., 1933; U.N.C.....	1933	1935
Eagle, W. W., Durham; Johns Hopkins, 1925.....	1929	1930
Easley, Eleanor B., Durham; Duke Univ., 1934.....	1940	1940
Erickson, C. C., Durham; Univ. of Minn., 1932.....	1940	1941
Fassett, Burton W., Durham (Hon.); Balt. Med. Coll., 1898.....	1899	1909
Fields, Leonard E., Chapel Hill; Univ. of Pa., 1929; U.N.C.....	1929	1931
Finkelstein, Harold, Durham; Johns Hopkins, 1928.....	1937	1938
Fleming, Ralph Gibson, Durham; Univ. of Pa., 1936.....	1936	1938
Fleming, William Leroy, Chapel Hill; Vanderbilt Univ., 1932.....	1940	1940
Forbus, Wiley D., Durham; Johns Hopkins, 1923.....	1929	1935
Forrest, D. E., Hillsboro; Univ. of Md., 1930.....	1930	1933
Fox, Herbert J., Durham; Duke Univ., 1935.....	1940	1941
Gardner, Clarence E., Jr., Durham; Johns Hopkins, 1928.....	1932	1932
Goudge, Mabel E., Durham; Ohio State Univ. Coll. of Med., 1922.....	1925	1927
Graham, W. A., Durham; Univ. of Pa., 1932.....	1932	1937
Graves, Robert Williams, Durham; Duke Univ., 1933.....	1937	1938
Greenhill, M. H., Durham; Univ. of Chicago, 1936.....	1940	1941
Hamblen, E. C., Durham; Univ. of Va., 1928.....	1931	1931
Hanes, F. M., Durham; Johns Hopkins, 1908.....	1916	1917
Hansen-Pruss, O. C., Durham; Johns Hopkins, 1924.....	1930	1931
Hardee, W. P., Durham; Jeff. Med. Coll., 1912; U.N.C.....	1912	1924
Harris, Isaac E., Jr., Durham; Jeff. Med. Coll., 1933.....	1933	1939
Hart, Deryl, Durham; Johns Hopkins, 1921.....	1929	1930
Harton, R. A., Durham; Temple Univ., 1934.....	1935	1936
Hedgpeth, E. McG., Chapel Hill; Univ. of Pa., 1931; U.N.C.....	1931	1934
Hendrix, James Paisley, Durham; Univ. of Pa., 1930.....	1930	1939
Hicks, Calvin S., Durham (Hon.); Univ. of Md., 1904.....	1904	1904
Holloway, Joseph C., Durham; Tulane, 1927; U.N.C.....	1928	1929
Holloway, Robert Lee, Durham (Hon.); Med. Coll. of Va., 1893.....	1893	1901
Holman, Russel L., Chapel Hill; Vanderbilt Univ., 1931.....	1938	1939
Horack, Harold M., Durham; Duke Univ., 1937.....	1939	1940
Johnston, Christopher, Durham; Johns Hopkins, 1926.....	1930	1930
Kerns, T. C., Durham; Univ. of Pa., 1911; U.N.C.....	1911	1913
Lawson, Robert Barrett, Winston-Salem; Harvard, 1936.....	1940	1941
London, Arthur Hill, Jr., Durham; Univ. of Pa., 1927.....	1927	1930
Lyman, Richard S., Durham; Johns Hopkins, 1921.....	1940	1941
MacNider, Wm. deB., Chapel Hill (Hon.); U.N.C., 1903.....	1903	1903
Makepeace, A. Watts, Chapel Hill; Harvard, 1928.....	1941	1941
Manning, I. H., Chapel Hill (Hon.); Long Island Coll. Hospital, 1897; U. N. C.....	1899	1901
Manning, Isaac H., Jr., Durham; Harvard, 1935.....	1938	1939
Markham, Blackwell, Durham; Harvard Univ., 1922; U.N.C.....	1922	1925
Martin, Donald S., Durham; Univ. of Rochester, 1930.....	1938	1939
McBryde, Angus M., Durham; Univ. of Pa., 1928.....	1931	1932
McCracken, Joseph P., Durham; Duke Univ., 1937.....	1938	1941
McCutcheon, W. B., Durham; Med. Coll. of Va., 1921.....	1921	1925
McDowell, Roy H., Durham; Univ. of Md., 1929.....	1930	1931

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McKee, Lewis Middleton, Durham; Temple Univ., 1933; U.N.C.	1934	1934
McPherson, S. D., Durham (Hon.); Univ. of Md., 1903; U.N.C.	1903	1904
Menefee, E. E., Jr., Durham; Duke Univ., 1936	1940	1941
Milam, D. F., Chapel Hill; Univ. of Chicago, 1923	1939	1940
Morgan, W. G., Chapel Hill; Univ. of Pa., 1931	1931	1937
Nichols, R. E., Jr., Durham; Univ. of Pa., 1930; U.N.C.	1930	1932
Nichols, R. E., Sr., Durham (Hon.); Med. Coll. of Va., 1890	1890	1904
Nicholson, W. M., Durham; Johns Hopkins, 1931	1935	1937
Norton, Roy, Fort Bragg; Vanderbilt, 1928; U. N. C.	1928	1932
Orgain, Edward S., Durham; Univ. of Va., 1930	1934	1936
Patterson, Fred G., Chapel Hill; Univ. of Pa., 1937	1937	1940
Pearse, Richard L., Durham; Harvard Univ., 1931	1938	1938
Perry, D. R., Durham; Jeff. Med. Coll., 1919; Wake Forest, 1917	1919	1922
Persons, Elbert Lapsley, Durham; Harvard Univ., 1927	1931	1931
Plummer, D. E., Durham; Med. Coll. of Va., 1934	1934	1938
Powell, Albert H., Durham; Univ. of Georgia, 1924	1925	1926
Raney, R. Beverly, Durham; Harvard Univ., 1930	1934	1935
Reeves, Robert J., Durham; Baylor Univ., 1924	1930	1930
Reque, Paul, Durham; Duke, 1933	1940	1941
Richardson, W. P., Chapel Hill; Med. Coll. of Va., 1928; Wake Forest, 1926	1928	1929
Riggsbee, A. E. (Hon.), Durham; Univ. of N. C., 1909	1909	1911
Roberson, Foy, (Hon.), Durham; Jeff. Med. Coll., 1909; U.N.C.	1909	1912
Roberts, Bryan Nazer, Hillsboro; Univ. of Md., 1925; U.N.C.	1925	1926
Roberts, B. W., Durham; Univ. of Md., 1924; U. N. C.	1924	1927
Roberts, Louis C., Durham; Duke Univ., 1933	1935	1940
Robertson, E. M., Durham; Tulane, 1912; U.N.C.	1912	1929
Rosenau, M. J., Chapel Hill (Hon.); Univ. of Pa., 1889	1937	1937
Ross, Robert A., Durham; Univ. of Pa., 1922; U.N.C.	1922	1926
Rude, Joe C., Durham; Univ. of Oklahoma, 1930	1941	1941
Ruffin, J. M., Durham; Univ. of Va., 1926	1930	1931
Schiebel, Herman Max, Durham; Johns Hopkins, 1933	1938	1940
Schuler, J. E., Durham; Med. Coll. of Va., 1914	1920	1922
Schulze, William, Durham; Duke Univ., 1936	1940	1941
Smith, Annie T., Durham; Univ. of Ill., 1923; U.N.C.	1925	1926
Smith, D. T., Durham; Johns Hopkins, 1922	1931	1931
Speed, Joseph A., Durham; Jeff. Med. Coll., 1914	1914	1916
Spikes, N. O., Durham; Jeff. Med. Coll., 1924; U.N.C.	1924	1927
Sprunt, Douglas H., Durham; Yale Univ., 1927	1934	1935
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919; U.N.C.	1919	1923
Stone, Robert Edward, Chapel Hill; Harvard Univ., 1934	1937	1940
Sweaney, Hunter M., Durham; Univ. of Pa., 1919; U.N.C.	1919	1920
Thomas, Walter Lee, Durham; Univ. of Va., 1931	1937	1938
Thornhill, E. Hale, Durham; Duke Univ., 1938	1941	1942
Tyler, E. R., Durham; Jefferson Med Coll., 1923	1923	1927
Vaughan, Walter Weddle, Durham; Jeff. Med. Coll., 1933	1933	1938
Watkins, Geo. T., Jr., Durham; Jeff. Med. Coll., 1915; Wake Forest, 1913	1915	1917
Watkins, W. M., Durham; Jeff. Med. Coll., 1923	1923	1925
Wilkins, R. B., Durham; N. C. Med. Coll., 1913	1913	1917
Woodhall, Barnes, Durham; Johns Hopkins, 1930	1937	1937
Wright, John J., Chapel Hill; Vanderbilt Univ., 1935	1940	1942

EDGEcombe-NASH COUNTIES SOCIETY

President: Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924	1924	1924
Secretary: Wall, W. S., Rocky Mount; Univ. of Pa., 1933	1933	1936
Anderson, R. S., Rocky Mount; Univ. of Md., 1924; U.N.C.	1924	1932
Bass, Spencer P., Tarboro (Hon.); Univ. of Va., 1906	1907	1909
Battle, Margaret White, Rocky Mount; Univ. of Mich., 1933	1936	1937
Battle, N. P., Rocky Mount; Univ. of Pa., 1926; U.N.C.	1930	1931
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope (Hon.); Jeff. Med. Coll., 1888	1888	1901
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Coppedge, T. O., Nashville; Coll. of P. & S., Balt., 1908; U.N.C.	1909	1917
Crumpler, James Fulton, Rocky Mount; Bellevue Hosp. Med. School, 1930	1930	1935
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., 1911; U.N.C.	1911	1915
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917

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DeLoatch, M. W., Tarboro; Med. Coll. of Va., 1928.....	1928	1930
Dixon, W. H., Rocky Mount; Jefferson Med. Coll., 1919.....	1919	1922
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904; U.N.C.....	1906	1919
Gorham, H. J., Nashville; Univ. of Md., 1926.....	1926	1927
Green, W. W., Tarboro (Hon.); Univ. of N. C., 1908.....	1908	1910
Jones, W. S., Nashville; Med. Coll. of Va., 1927; Wake Forest, 1925....	1927	1927
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918.....	1918	1920
Kornegay, Lemuel W., Rocky Mount (Hon.); N. C. Med. Coll., 1906....	1906	1906
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906.....	1906	1914
McDowell, W. K., Tarboro; Jefferson Med. Coll., 1931.....	1931	1934
Noell, R. H., Rocky Mount; Univ. of Md., 1916.....	1916	1920
Pearson, H. O., Pinetops; Med. Coll. of Va., 1926.....	1927	1928
Perry, E. M., Rocky Mount; Coll. of P. & S., Balt., 1907.....	1907	1919
Raby, J. G., Tarboro; Univ. Coll. of Med., 1911.....	1911	1913
Royster, Thomas H., Tarboro; Univ. Coll. of Med., 1908.....	1908	1914
Smith, C. T., Rocky Mount; Univ. of Pa., 1918; U.N.C.....	1918	1920
Smith, J. G., Rocky Mount; Duke Univ., 1934.....	1937	1938
Speight, J. A., Rocky Mount; Univ. of La., 1914; U.N.C.....	1915	1916
Staley, S. Walter, Rocky Mount (Hon.); Med. Coll. of S. C., 1901; U. N. C.	1901	1904
Sykes, J. V., Rocky Mount; Univ. of Pa., 1929.....	1929	1930
Thorpe, A. T., Rocky Mount; Univ. of Pa., 1921; U. N. C.....	1921	1923
Way, Samuel Easom, Rocky Mount; Univ. of Md., 1933.....	1933	1933
Whitaker, J. Allen, Rocky Mount; Temple Univ., 1933; U.N.C.....	1934	1935
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909.....	1916	1917

FORSYTH COUNTY MEDICAL SOCIETY

President: Garvey, R. R., Winston-Salem; N. C. Med. Coll., 1915.....	1915	1919
Secretary: Adams, Carlton N., Winston-Salem; Duke Univ., 1932.....	1936	1937
Ader, O. L., Walkertown; Univ. of Pa., 1925.....	1925	1927
Andrew, L. A., Jr., Winston-Salem; U. N. C., and Duke, 1932.....	1932	1936
Avery, E. S., Winston-Salem; Univ. of Pa., 1928.....	1928	1930
Bailey, R. L., Jr., Winston-Salem; Univ. of Va., 1937.....	1941	1942
Beavers, J. W., Kernersville; Univ. of Pa., 1930; Wake Forest, 1928....	1930	1935
Belton, J. F., Winston-Salem; Univ. of Pa., 1914.....	1914	1916
Benbow, Edgar V., Winston-Salem; Jeff. Med. Coll., 1925; U.N.C.....	1925	1929
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910.....	1910	1920
Bender, John R., Lexington; Va. Med. Coll., 1935.....	1935	1939
Bowers, M. A., Winston-Salem; Tulane, 1911; U.N.C.....	1911	1914
Bradford, G. E., Winston-Salem; Univ. of Tenn., 1933.....	1935	1936
Bradshaw, H. H., Winston-Salem; Jefferson Med. Coll., 1927.....	1927	1942
Brooks, E. Bruce, Winston-Salem; Duke Univ., 1933.....	1935	1936
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915.....	1920	1921
Carlton, Romulus L., Winston-Salem (Hon.); Univ. of Md., 1906.....	1906	1906
Carpenter, Coy C., Winston-Salem; Syracuse Univ., 1924; Wake Forest, 1922	1924	1927
Casstevens, J. C., Clemmons; Med. Coll. of Va., 1926; Wake Forest, 1924.....	1926	1927
Combs, Fielding, Winston-Salem; Med. Coll. of Va., 1923.....	1931	1932
Cooke, G. C., Winston-Salem; Univ. of Md., 1919; U.N.C.....	1919	1920
Couch, V. F., Winston-Salem; Coll. of P. & S., N. Y., 1911; Wake Forest, 1908	1911	1919
Craig, S. Douglas (Hon.), Winston-Salem; Tulane Univ., 1908.....	1911	1912
Dalton, Wm. N., Winston-Salem (Hon.); N. C. Med. Coll., 1904.....	1904	1905
Davis, J. P., Winston-Salem; Univ. of Pa., 1934.....	1937	1938
Davis, Thomas W., Winston-Salem (Hon.); S. C. Med. Coll., 1898; U. N. C.	1899	1899
Drummond, C. S., Winston-Salem; Univ. of Ga., 1930.....	1933	1933
Farrington, J. C. P., Winston-Salem; Rush Med. Coll., 1930.....	1933	1934
Fritz, O. G., Walkertown; Med. Coll. of Va., 1931.....	1932	1940
Frost, T. T., Indianapolis, Ind.; Western Reserve Univ., 1929.....	1939	1940
Garvey, Fred K., Winston-Salem; Univ. of Cincinnati, 1925; U.N.C.....	1925	1932
Gilbert, E. L., Winston-Salem; Univ. of Tenn., 1932.....	1935	1936
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910.....	1910	1915
Grollman, Arthur, Winston-Salem; Johns Hopkins, 1930.....	1930	1942
Harrell, George T., Jr., Winston-Salem; Duke Univ., 1936.....	1940	1940
Harrill, J. A., Winston-Salem; Univ. of Pa., 1935.....	1935	1939
Harrison, Tinsley R., Winston-Salem; Johns Hopkins, 1922.....	1923	1942
Hart, O. J., Winston-Salem; Med. Coll. of S. C., 1925.....	1930	1932
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916; U.N.C.....	1916	1917

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Helsabeck, B. A., Winston-Salem; Med. Coll. of Va., 1931	1931	1936
Helsabeck, Chester J., Walnut Cove; Univ. of Md., 1919	1919	1922
Helsabeck, R. S., King; N. C. Med. Coll., 1913	1913	1936
Henley, Ruth D., Winston-Salem; Woman's Med. Coll. of Pa., 1935	1937	1938
Hightower, Felda, Winston-Salem; Univ. of Penna., 1933	1933	1936
Holmes, G. W., Winston-Salem; Med. Coll. of Va., 1931	1931	1933
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1915
Izlar, H. L., Winston-Salem; Med. Coll. of S. C., 1915	1916	1917
Johnson, Paul W., Winston-Salem; Univ. of Louisville, 1930	1932	1933
Johnson, Wingate M., Winston-Salem (Hon.); Jeff. Med. Coll., 1908	1908	1910
Jones, Beverley N., Winston-Salem; Med. Coll. of Va., 1915	1915	1921
Jones, R. Rives, Winston-Salem; Med. Coll. of Va., 1923	1923	1925
Keijger, O. R., Winston-Salem; Univ. Coll. of Med., 1911; U.N.C.	1911	1915
Kennedy, L. T., Winston-Salem; Jeff. Med. Coll., 1935	1937	1939
Kerr, Jas. Edwin, Danbury (Hon.); Univ. of Md., 1897	1898	1898
King, E. S., Winston-Salem; Jefferson Med. Coll., 1927	1927	1930
Kirby, W. L., Winston-Salem; Vanderbilt Univ., 1925	1926	1930
Lassiter, V. C., Winston-Salem; Emory Univ., 1925	1928	1929
Lynville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y., 1889	1889	1896
Long, Vann McKee, Winston-Salem (Hon.); N. C. Med. Coll., 1906	1906	1908
MacMillan, E. A., Winston-Salem; Univ. of Pa., 1933	1933	1937
Marshall, J. F., Winston-Salem; Univ. of Pa., 1931	1931	1935
Martin, B. F., Winston-Salem; Jefferson Med. Coll., 1936	1936	1940
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920	1920	1921
Mauzy, Chas. H., Jr., Winston-Salem; Univ. of Va., 1933	1938	1939
Mav, Wm. P., Winston-Salem; George Washington Univ., 1935	1937	1938
McCants, C. H., Winston-Salem; Med. Coll. of S. C., 1925	1929	1931
McDowell, Harold C., Winston-Salem; Jefferson Med. Coll., 1931	1931	1936
McMillan, R. L., Winston-Salem; Duke Univ., 1933	1936	1938
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Morhead, Robert P., Winston-Salem; Jefferson Med. Coll., 1936	1936	1938
Munt, H. F., Winston-Salem; Med. Coll. of Va., 1911	1914	1915
Norfleet, Charles M., Jr., Winston-Salem; Univ. of Pa., 1937	1937	1941
Odom, R. T., Winston-Salem; Univ. of Tenn., 1934	1941	1942
Ogburn, L. C., Winston-Salem; Jeff. Med. Coll., 1928	1928	1936
Paddison, Jno. Robt., Kernersville (Hon.); Univ. of Md., 1902; U.N.C.	1902	1904
Pegg, F. G., Winston-Salem; Med. Coll. of Va., 1934	1934	1936
Pepper, John K., Winston-Salem (Hon.); Coll. of P. & S., Balt., 1907	1908	1908
Pfohl, Samuel F., Winston-Salem (Hon.); Univ. of Pa., 1894	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923; Wake Forest, 1921	1923	1925
Pool, C. Glenn, Winston-Salem; Tulane Univ., 1924	1924	1927
Pulliam, B. E., Winston-Salem; Jeff. Med. Coll., 1928	1928	1931
Rankin, S. W., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Rodiek, J. C., Winston-Salem; Tulane, 1921	1921	1941
Rose, John A., Winston-Salem; Univ. of Texas, 1933	1935	1942
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918; U.N.C.	1920	1920
Schallert, P. O. (Hon.), Winston-Salem; Univ. of Ill., 1904	1911	1912
Simmons, R. R., Winston-Salem; Med. Coll. of Va., 1917	1923	1924
Sink, V. Rex, Winston-Salem; Univ. of Pa., 1928; U.N.C.	1930	1935
Slate, John S., Winston-Salem (Hon.); Univ. Coll. of Med., 1900	1899	1904
Spainhour, Ellis H., Winston-Salem (Hon.); Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Winston-Salem; Univ. of Md., 1911	1913	1924
Speas, W. P., (Hon.), Winston-Salem; Univ. Coll. of Med., 1911	1911	1912
Spicer, Richard W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911	1910	1916
Sprunt, W. H. Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Starling, H. M., Winston-Salem; Med. Coll. of Va., 1931	1931	1937
Stephenson, Anne L., Winston-Salem; Woman's Med. Coll. of Pa., 1937	1939	1940
Stone, G. E., King; Med. Coll. of Va., 1915	1915	1936
Street, C. A., Winston-Salem; Harvard, 1918	1918	1925
Strickland, Edward F., Winston-Salem (Hon.); Univ. of N. Y., 1887; U. N. C.	1887	1893
Taylor, V. W., Jr., Winston-Salem; Jefferson Med. Coll., 1938	1938	1942
Thomas, W. C., Winston-Salem; Univ. of Md., 1939	1941	1942
Thompson, Edgar S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, R. G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914
Yann, H. M., Winston-Salem; Jefferson Med. Coll., 1917	1920	1923
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912; Wake Forest, 1910	1912	1915
Webster, N. M., Winston-Salem; Duke Univ., 1937	1939	1942
Whitaker, R. H., Kernersville; Univ. of Pa., 1934	1934	1939
Whittington, Jas. B. (Hon.), Winston-Salem; N. C. Med. Coll., 1911	1911	1911

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Williams, J. R., Jr., Winston-Salem; Rochester, 1935.....	1941	1942
Wolfe, R. V., Winston-Salem; Univ. of Ind., 1937.....	1940	1941
Wright, O. E., Winston-Salem; Emory Univ., 1924.....	1924	1928
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913; U.N.C.....	1913	1916
Wylie, W. deK., Winston-Salem; Univ. of Va., 1924.....	1926	1928
Yoder, Paul A., Winston-Salem; Univ. of Pa., 1923.....	1923	1925

FRANKLIN COUNTY SOCIETY

Burt, S. P., Louisburg, (Hon.); Coll. of P. & S., Balt., 1896.....	1896	1904
Perry, A. H., Wood; Univ. of Md., 1924.....	1924	1925
Perry, H. G., Louisburg; P. & S., Baltimore, 1915.....	1915	1916
Yarborough, R. F., Louisburg, (Hon.); Geo. Wash. Univ. 1898.....	1899	1899

GASTON COUNTY SOCIETY

President: Glenn, H. F., Jr., Gastonia; Emory Univ., 1932.....	1932	1934
Secretary: Pugh, Charles H. (Hon.), Gastonia; N. C. Med. Coll., 1910.....	1910	1910
Albright, Sam, Belmont; Georgetown Univ., 1934.....	1934	1937
Allen, M. H., Cramerton; Emory Univ., 1929.....	1930	1931
Anders, McT., (Hon.), Gastonia; Maryland Med. Coll., 1901.....	1902	1902
Anthony, J. E., (Hon.), Kings Mountain; Univ. of Tenn., 1911.....	1911	1912
Anthony, W. A., Gastonia; Med. Coll. of Va., 1929.....	1929	1932
Bain, E. A., Gastonia;.....		1942
Belk, Geo. W., Gastonia; Atlanta Sch. of Med., 1913.....	1918	1924
Blair, J. L., Gastonia; Atlanta Med. Coll., 1915.....	1920	1921
Blair, J. Samuel, Gastonia; Med. Coll. of S. C., 1937.....	1938	1940
Chandler, L. D., Gastonia; Med. Coll. of S. C., 1938.....	1940	1941
Clinton, R. S., Gastonia; Univ. of Md., 1914.....	1914	1920
Cranford, J. F., Gastonia; Univ. of N. C., 1909.....	1934	1935
Glenn, Chas. A., Gastonia; Med. Coll. of S. C., 1936.....	1936	1937
Glenn, Lucius N., Gastonia (Hon.); Univ. of Md., 1897.....	1897	1904
Grigg, John R., Gastonia; Univ. of Louisville, 1927.....	1928	1937
Groves, R. B., Lowell; Med. Coll. of Va., 1924.....	1924	1925
Herrin, H. K., Gastonia; Med. Coll. of Va., 1935.....	1935	1937
Houser, F. M., Cherryville; Univ. of Pa., 1928; U. N. C.....	1929	1930
Jones, W. M., Gastonia; Med. Coll. of S. C., 1922.....	1927	1928
Lyday, C. E., Gastonia; Atlanta School of Med., 1910.....	1910	1920
Matthews, W. S., Bessemer City; N. C. Med. Coll., 1910.....	1910	1926
McAdams, C. R., Belmont; N. C. Med. Coll., 1912.....	1912	1916
McChesney, W. W., Gastonia; Med. Coll. of Va., 1915.....	1926	1927
McConnell, H. R., Gastonia; Univ. of Md., 1924.....	1927	1930
Miller, R. C., Gastonia; N. C. Med. Coll., 1909; U.N.C.....	1918	1919
Mitchell, R. H., Gastonia; Med. Coll. of Va., 1936.....	1936	1938
Moore, B. D., Mt. Holly; Med. Coll. of Va., 1915.....	1915	1921
Norman, J. Standing, Gastonia; Coll. of P. & S., Balt., 1909; U.N.C.....	1911	1920
Norman-Glenn, Dorothy F., Gastonia; Woman's Med. Coll. of Pa., 1938.....	1938	1940
Parks, W. B., Gastonia; Univ. of Md., 1924.....	1924	1927
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916.....	1916	1920
Patrick, L. N., Gastonia; Univ. of Md., 1909.....	1910	1913
Payne, J. W., Cherryville;.....		1942
Powell, H. S., Gastonia; Univ. of Va., 1932.....	1932	1937
Pressly, J. M., Belmont; N. C. Med. Coll., 1915.....	1915	1920
Quickel, John C., Gastonia; Univ. of Pa., 1932; U.N.C.....	1932	1936
Ramsaur, J. T., Cherryville; Univ. of Chicago, 1933.....	1934	1935
Reid, James W., Lowell (Hon.); Jeff. Med. Coll., 1908; U.N.C.....	1908	1909
Rhyne, Robert Edgar, Gastonia (Hon.); N. C. Med. Coll., 1907.....	1907	1908
Roberts, W. M., Gastonia; Tufts, 1925.....	1928	1929
Robinson, James Lee, Gastonia; Univ. of Pa., 1932.....	1932	1936
Stroupe, A. U., Jr., Mount Holly; Med. Coll. of Va., 1931.....	1932	1938
Taylor, B C., Mount Holly; N. C. Med. Coll., 1910.....	1911	1923
Utley, H. G., Gastonia; Univ. of Md., 1894.....	1894	1941
Weathers, B. G., Stanley; Med. Coll. of Va., 1929.....	1929	1941
Wilkins, Samuel A., Dallas (Hon.); Univ. of Ky., 1902.....	1903	1903

GATES COUNTY SOCIETY

Blanchard, T. W., Hobbsville; Med. Coll. of Va., 1911.....	1911	1919
Carter, Thomas L., Gatesville; Med. Coll. of Va., 1917.....	1917	1928
Payne, John A. III, Sunbury; Med. Coll. of Va., 1933.....	1935	1942

GRAHAM COUNTY SOCIETY

GRANVILLE COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Clay, E. L., Oxford; Univ. of Ky., 1929	1929	1933
Secretary: Carrington, S. M., Oxford; Rush Med. Coll., 1931; U.N.C.	1931	1934
Bradsher, J. S., Stovall; Univ. of Va., 1925	1925	1928
Daniel, N. C., Oxford (Hon.); N. C. Med. Coll., 1895	1895	1903
Elliott, Julian C., Oxford; Univ. of Md., 1926; Wake Forest, 1924	1926	1929
Hays, B. K., Oxford (Hon.); Univ. Coll. of Med., 1894	1894	1897
Morris, J. A., Franklinton, (Hon.); Vanderbilt Univ., 1890	1893	1899
Noblin, Roy L., Oxford; Med. Coll. of Va., 1924	1924	1925
Norwood, Ballard, Oxford; Med. Coll. of Va., 1937	1937	1940
Taylor, Rives W., Oxford; Tulane, 1926; U.N.C.	1926	1928
Taylor, Wm. L., Oxford (Hon.); Univ. of Va., 1900	1901	1901
Thomas, Wm. N., Oxford; Med. Coll. of Va., 1911	1911	1914
Thompson, J. W., Creedmoor; Ky. Univ., Louisville, 1904	1907	1917
Winston, P. H., Clarksville, Va.; Med. Coll. of Va., 1929	1929	1930

GREENE COUNTY SOCIETY

President: Walker, Robert Jeffrey, Jr., Snow Hill; Med. Coll. of Va., 1932	1934	1935
Secretary: Ellinwood, Everett H., Snow Hill; Temple Univ., 1935	1935	1937
Carroll, F. W., Hookerton; Med. Coll. of Va., 1925	1926	1927
Dawson, W. E., Hookerton; Jeff. Med. Coll., 1920; Wake Forest, 1918	1920	1922
Harper, J. H., Snow Hill (Hon.); Jeff. Med. Coll., 1905; U.N.C.	1906	1906
Marlowe, W. A., Walstonburg; Jefferson Med. Coll., 1919	1919	1921
Whittington, Wm. W., Snow Hill (Hon.); Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President: Bonner, M. D., Jamestown; Univ. of Md., 1930	1930	1934
Secretary: *Rubin, A. S., Greensboro; N. Y. Med. Coll., 1937	1937	1941
Treasurer: Cook, J. Lindsay, Greensboro; Univ. of Pa., 1925	1925	1928
Apple, E. D., Greensboro; Wash. Univ. School of Med., 1929	1929	1936
Aydlett, H. T., Greensboro (Hon.); Univ. of Va., 1894	1895	1906
Banner, Chas. W., Greensboro (Hon.); Univ. of Md., 1899	1899	1901
Bonner, O. B., High Point; Univ. of Md., 1917	1920	1922
Brockmann, Harry L., High Point; Univ. of Pa., 1917; U.N.C.	1917	1921
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914; Wake Forest, 1912	1914	1917
Burwell, John C., Greensboro; Duke Univ., 1933	1936	1937
Cardwell, D. W., Greensboro; Med. Coll. of Va., 1932	1936	1937
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Clary, William T., Greensboro; Univ. of Pa., 1928	1928	1934
Cole, Walter F., Greensboro (Hon.); Johns Hopkins, 1909	1909	1910
Collings, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cook, H. L., Jr., Greensboro; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Cook, J. L., Greensboro; Univ. of Pa., 1925; U.N.C.	1925	1928
Corwin, Warren C., Greensboro; Johns Hopkins, 1932	1932	1941
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Dalton, B. B., Liberty; Duke Univ., 1932; U. N. C.	1933	1935
Dalton, William B., Stokesdale; Univ. of Md., 1918	1939	1942
Davis, P. B., High Point; Jeff. Med. Coll., 1926; U. N. C.	1926	1929
Davis, R. B., Greensboro; Med. Coll. of Va., Richmond, 1915	1916	1917
Dawson, A. Ray, Greensboro; Med. Coll. of Va., 1929	1940	1941
Dees, Ralph Erastus, Greensboro (Hon.); Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro (Hon.); Univ. of Md., 1906	1907	1907
Dunn, R. B., Greensboro; McGill Univ., 1933	1936	1937
Durham, C. W., Greensboro; Geo. Washington Univ., 1927	1927	1930
Dyer, J. W., High Point; Univ. of Louisville, 1916	1921	1921
Edwards, V. E., Stokesdale; Univ. of Md., 1913	1913	1913
Farmer, Wm. D., Greensboro; Duke Univ., 1934	1939	1939
Flagge, Phillip W., High Point (Hon.); Washington Univ., 1902	1905	1906
Flythe, W. H., High Point; Vanderbilt Univ., 1933	1933	1937
Fortune, Alex. F., Greensboro (Hon.); Univ. Coll. of Med., 1900; U.N.C.	1900	1904
Fox, Dennis B., Greensboro; Vanberbilt Univ., 1937	1937	1942
Fox, N. A., Greensboro; Univ. of Pa., 1924	1924	1926
Garrard, R. L., Greensboro; Harvard, 1932	1940	1941
Geddie, K. B., High Point; Jeff. Med. Coll., 1921; U.N.C.	1921	1923
Gilmore, C. M., Greensboro; Med. Coll. of Va., 1925; Wake Forest, 1923	1925	1926

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Glascoek, Joy H., Greensboro (Hon.); Women's Med. Coll. of Balt., 1896	1896	1900
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of N. Y. Infirmary, 1892	1894	1896
Grayson, C. S., High Point (Hon.); Geo. Washington Univ., 1906	1907	1908
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrill, H. C., Greensboro; Johns Hopkins, 1933	1933	1940
Harrison, Edmund, Greensboro (Hon.); Univ. Coll. of Med., 1896	1900	1900
Harrison, Edward T., High Point; Univ. of Va., 1926	1926	1928
Harvey, W. W., Greensboro; Emory Univ., 1920	1922	1923
Henry, Marina H., Jamestown; Women's Med. Coll. of Pa., 1938	1938	1940
Herring, R. A., High Point; Tulane, 1905; U.N.C.	1923	1924
Holladay, L. W., High Point; Med. Coll. of Va., 1929	1936	1937
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1921
Jackson, Walter Leo, High Point; N. C. Med. Coll., 1911	1911	1913
Johnson, Harry L., Greensboro; Univ. of Cincinnati, 1924	1924	1927
Jones, Wm. M., Greensboro (Hon.); Univ. of Md., 1903	1903	1903
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Leath, McLean B., High Point; Jefferson Med. Coll., 1933	1933	1937
LeBauer, Maurice L., Greensboro; Univ. of Va., 1929	1930	1932
LeBauer, S. F., Greensboro; Univ. of Va., 1929	1930	1932
Lennon, H. C., Greensboro; Univ. of Pa., 1931	1931	1941
Lewis, W. G., Stokesdale; Med. Coll. of Va., 1938	1938	1940
Little, H. L., Gibsonville; Washington Univ., 1934; U.N.C.	1934	1937
Lyday, R. O., Greensboro; Univ. of Pa., 1920; U.N.C.	1920	1927
Lyon, B. R., Greensboro; Col. Univ., 1915	1920	1920
Maness, A. K., Greensboro; Jeff. Med. Coll., 1928; U.N.C.	1928	1929
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
Mathews, Robert Wm., Greensboro; Emory Univ., 1932	1937	1938
McAlister, Jean, Greensboro; Univ. of Pa., 1933; U.N.C.	1936	1937
McAnally, Wm. J., High Point (Hon.); Balt. Med. Coll., 1897	1896	1899
McCain, Walkup K., High Point; Jeff. Med. Coll., 1929; U.N.C.	1929	1930
McCain, Wm. R., High Point (Hon.); Univ. of Md., 1897; U.N.C.	1898	1898
McGee, J. M., Greensboro; Univ. of Pa., 1925	1927	1928
Merritt, Jesse Fred, Greensboro; Northwestern Univ., 1936	1937	1938
Miles, May S., Greensboro (Hon.); Laura Mem. Woman's Med. Coll., 1898	1904	1905
Mills, Chas. R., Greensboro; Univ. of Pittsburgh, 1936	1938	1938
Norment, W. B., Greensboro; Jeff. Med. Coll., 1922; U.N.C.	1922	1932
Ogburn, H. H., Greensboro; Johns Hopkins, 1913; U.N.C.	1913	1914
Ownbey, Arthur D., Greensboro; Med. Coll. of Va., 1920	1925	1927
Parker, H. R., Greensboro; Univ. of Syracuse, 1923; Wake Forest, 1921	1924	1925
Parks, W. C., Jr., High Point; S. C. Med. Coll., 1938	1938	1940
Patterson, Fred M., Greensboro; Univ. of Pa., 1924	1924	1928
Perry, G. G., High Point; Med. Coll. of Va., 1933	1933	1934
Pipes, David M., Greensboro; Tulane, 1934	1939	1940
Post, J. J., Greensboro; Columbia Univ., 1919	1925	1926
Prefontaine, J. E., Greensboro; Laval Univ., Quebec, 1927	1931	1934
Ravenel, S. F., Greensboro; Johns Hopkins, 1923	1923	1926
Reaves, W. P., Greensboro (Hon.); Univ. of the South, 1903	1905	1907
Register, J. F., Greensboro; Med. Coll. of S. C., 1931	1936	1937
Reitzel, Claude E., High Point (Hon.); Coll. of P. & S., Atlanta, 1902	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. of Va., 1916	1926	1927
Saunders, S. Stewart, High Point; Harvard Univ., 1924	1926	1927
Schoonover, R. A., (Hon.), Greensboro; Balt. Med. Coll., 1905	1912	1912
Sharp, O. L., Greensboro; Jeff. Med. Coll., 1922	1924	1925
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Shelburne, P. A., Greensboro; Univ. of Va., 1927	1928	1928
Shohan, Joseph, Greensboro; Coll. of P. & S., Baltimore, 1901	1914	1923
Sikes, C. Henry, Greensboro; Jeff. Med. Coll., 1931	1933	1934
Siske, Grady C., Pleasant Garden; Chicago Med. Coll., 1936	1937	1938
Slate, J. E., High Point; Tulane Univ., 1934	1934	1937
Slate, J. W., High Point; Univ. Coll. of Med., 1900	1899	1925
Slate, M. L., High Point; Univ. of Md., 1931	1931	1934
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908	1910	1913
Smith, O. Norris, Greensboro; Univ. of Pa., 1933	1938	1938
Smith, R. M., Greensboro; Univ. of Pa., 1934	1934	1937
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887	1887	1891
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916; U.N.C.	1916	1917
Stevens, Jos. B., Greensboro; Duke Univ., 1935	1940	1940
Strickland, H. G., Greensboro; Univ. of Md., 1930; U.N.C.	1930	1937
Sumner, Emmett A., High Point; Baylor Univ., 1925	1926	1927
Tankersley, J. W., Greensboro (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, James N., Greensboro (Hon.); Med. Coll. of Va., 1901	1902	1905

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Taylor, James T., Greensboro (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1908	1908	1910
Taylor, S. R., Greensboro, Univ. of Pa., 1921; U.N.C.	1921	1924
Taylor, Wesley, Greensboro; Univ. of Mich., 1899	1925	1926
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point (Hon.); Univ. of Tenn., 1901	1901	1904
Tice, W. T., High Point; Jeff. Med. Coll., 1927; U. N. C.	1927	1929
Tyson, Thomas D., Jr., High Point; Johns Hopkins, 1933	1933	1938
Vaughan, Edwin W., Greensboro; Univ. of Va., 1937	1940	1940
Warwick, H. C., Greensboro; Med. Coll. of Va., 1934	1934	1936
Watson, H. A., Greensboro; Va. Med. Coll., 1930	1930	1941
Whittington, Claude T., Greensboro; Univ. of Md., 1927	1927	1929
Williams, John D., Guilford Station (Hon.); Vanderbilt Univ., 1898	1898	1898
Williams, John D., Jr., Stokesdale; Temple Univ., 1930	1931	1935
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wood, Geo. T., High Point; Jeff. Med. Coll., 1928; U.N.C.	1928	1935
York, Alexander Arthur, High Point (Hon.); Chattanooga Med. Coll., 1907	1907	1908
Young, J. E., Greensboro; Univ. of Va., 1932	1941	1942

* Elected to succeed A. Ray Dawson, who was called into Military Service.

HALIFAX COUNTY MEDICAL SOCIETY

President: Young, Robert F., Halifax; Emory Univ., 1937	1939	1940
Secretary: Hall, W. D., Roanoke Rapids; Med. Coll. of S. C., 1932	1933	1934
Bardin, R. M., Roanoke Rapids; Tulane Univ., 1929	1934	1935
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Blowe, R. B., Weldon; Med. Coll. of Va., 1938	1938	1941
Broun, Matthew S., Roanoke Rapids; Columbia Coll. of P. & S., 1919	1922	1923
Cole, H. A., Roanoke Rapids; Univ. of Va., 1937	1939	1940
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., 1911	1914	1916
Joyner, P. W., Enfield; Syracuse Univ., 1932; Wake Forest, 1930	1932	1935
Justis, L. H., Littleton; Med. Coll. of Va., 1916	1920	1920
Kroncke, Fred G., Roanoke Rapids; Univ. of Wisc., 1937	1941	1942
Maddrey, M. Crocker, Roanoke Rapids; Jefferson Med. Coll., 1931	1931	1937
Martin, J. W., Roanoke Rapids; Med. Coll. of Va., 1916	1919	1920
Neville, C. H., Scotland Neck; Tulane, 1927	1927	1928
Nicholson, B. M., Enfield; Univ. Coll. of Med., 1910	1910	1912
Palmer, Horace, Littleton; Atlanta School of Med., 1912	1912	1920
Pollack, David, Hobgood; Med. Coll. of Va., 1935	1936	1937
Robertson, C. B., Jackson; Med. Coll. of Va., 1933	1934	1938
Smith, O. F. (Hon.), Scotland Neck; Univ. Coll. of Med., Va., 1899	1899	1905
Stephenson, Bennett E., Weldon; Med. Coll. of Va., 1935	1935	1937
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Taylor, Thomas Jefferson, Roanoke Rapids; Jeff. Med. Coll., 1934	1934	1937
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917; U.N.C.	1917	1920
Weathers, Bahnson, Roanoke Rapids; Washington Univ., 1917	1921	1922
Whitaker, F. C., Enfield; Maryland Med. Coll., 1911	1911	1919
White, Francis W. M., Halifax; Med. Coll. of Va., 1924; Wake Forest, 1921	1924	1924

HARNETT COUNTY SOCIETY

President: Stanfield, W. W., Dunn; Med. Coll. of Va., 1932	1932	1940
Secretary: Hunter, W. B., Lillington; Univ. of Pa., 1911	1913	1920
Adair, W. E., Erwin; Temple Univ., 1938	1938	1941
Corbett, Clarence Lee, Dunn; Emory Univ., 1927	1927	1928
Doffermire, L. R., Erwin; Temple Univ., 1938	1938	1939
Eldridge, Harvey A., Dunn; Med. Coll. of Va., 1934	1934	1936
Fleming, Fred H., Coats; Tulane, 1930; Wake Forest, 1928	1930	1933
Halford, Jos. W., Lillington (Hon.); Geo. Washington Univ., 1904	1905	1905
Holt, Wm. P. (Hon.), Erwin; Jeff. Med. Coll., 1895	1895	1901
Johnson, J. R., Dunn; Med. Coll. of Va., 1932	1932	1941
Martin, J. F., Dunn (Hon.); N. C. Med. Coll., 1905	1905	1918
McKay, Joseph F., Buies Creek (Hon.); S. C. Med. Coll., 1884	1885	1900
O'Dell, J. W., Dunn; Univ. of Ga., 1926	1928	1929
Parker, Paul G., Erwin; Med. Coll. of Va., 1916	1916	1917
Peede, A. W., Lillington; Jeff. Med. Coll., 1930	1930	1933

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Poole, M. B., Dunn; Med. Coll. of Va., 1938.....	1938	1941
Wilson, S. Glenn, Angier; Med. Coll. of Va., 1930; U. N. C.....	1930	1932
Wyatt, A. T., Lillington; Jeff. Med. Coll., 1919.....	1919	1927

HAYWOOD COUNTY SOCIETY

President: Sisk, C. N., Waynesville; Univ. of Nashville, 1905.....	1922	1923
Secretary: Pate, J. F., Canton; Medical Coll. of S. C., 1927.....	1927	1929
Duckett, V. H., Canton; Univ. of Pa., 1930; Wake Forest, 1928.....	1930	1932
Johnson, W. C., Canton; Tulane, 1912; U.N.C.....	1912	1914
Kirkpatrick, W. L., Waynesville; Vanderbilt Univ., 1894.....	1894	1895
Lancaster, N. F., Waynesville; Med. Coll. of Va., 1931.....	1932	1933
McCracken, J. R., Waynesville (Hon.); N. C. Med. Coll., 1902.....	1902	1903
Moore, Roy H., Canton; Washington Univ., 1931.....	1931	1934
Osborne, Gladys H., Waynesville; Vanderbilt, 1932.....	1935	1936
Owen, C. E., Jr., Canton; Univ. of Pa., 1937.....	1937	1940
Owen, M. L., Canton; Univ. of Pa., 1932.....	1932	1936
Owen, Robert H., Canton; Univ. of Pa., 1931; Wake Forest, 1929.....	1931	1935
Reeves, J. L., Canton; Vanderbilt Univ., 1913.....	1913	1917
Roberson, Robert S., Waynesville; Med. Coll. of Va., 1930; Wake Forest, 1927.....	1930	1932
Russell, Jesse M., (Hon.), Canton; Univ. of Nashville, 1911.....	1911	1912
Smith, D. W., Waynesville; Harvard, 1931.....	1935	1936
Stretcher, R. H., Waynesville; Rush Med. Coll., 1927.....	1927	1930
Stringfield, Samuel L., Waynesville (Hon.); Jeff. Med. Coll., 1905.....	1905	1906
Stringfield, Thomas, Waynesville (Hon.); Vanderbilt Univ., 1898; U. N. C.....	1898	1899
Stringfield, Thomas, Jr., Waynesville; Univ. of S. C., 1934; U.N.C.....	1934	1937
Westmoreland, J. R., Canton; Washington Univ., 1932; U.N.C.....	1932	1934

HENDERSON COUNTY SOCIETY

President: Salley, E. McQueen (Hon.), Hendersonville; Univ. of Md., 1905.....	1905	1906
Secretary: Fortescue, Wm. N., Hendersonville; Duke Univ., 1934.....	1934	1936
Brackett, W. E., Hendersonville; Jefferson Med. Coll., 1915.....	1915	1924
Brown, J. S., Jr., Hendersonville; Tulane, 1925.....	1926	1927
Brown, J. S., Sr., Hendersonville (Hon.); Northwestern Univ., 1893.....	1894	1895
Corpening, F. G., Horse Shoe.....		1942
Dixon, Guy E., Hendersonville (Hon.); Coll. of P. & S., St. Louis, 1903.....	1903	1903
Fauntleroy, James W., Zirconia; P. & S., Columbia, 1896.....	1900	1929
King, D. I. Campbell, Hendersonville; S. C. Med. Coll., 1935.....	1936	1937
Kirk, W. R., Hendersonville (Hon.); Central Univ., 1891.....	1901	1903
McDonald, Lester B., Hendersonville; Jefferson Med. Coll. 1934.....	1934	1935
Pay, W. C., Hendersonville; Univ. of Louisville, 1894.....	1938	1940
Russell, Lloyd P., Fletcher; Univ. of Nashville, 1901.....	1902	1903
Sample, R. C., Hendersonville; Univ. of Pa., 1915.....	1915	1920
Sumner, T. W., Hendersonville; Jefferson Med. Coll., 1910.....	1910	1911
Trotter, Fred O., Hendersonville; Univ. of Minn., 1933.....	1934	1934
Wedington, J. L., Hendersonville; Southern Med. Coll., Atlanta, 1898.....	1925	1926

HERTFORD COUNTY SOCIETY

Bell, O. E., Winton; Okla. Univ., 1936.....	1937	1938
Cooke, Q. E., Murfreesboro; Med. Coll. of Va., 1937.....	1937	1939
Faison, Thos. G., Winton; Med. Coll. of Va., 1932.....	1932	1937
Matheson, J. Gaddy, Ahsoskie; Jeff. Med. Coll., 1929; U. N. C.....	1929	1931
Mitchell, Paul H., Ahsoskie (Hon.); Univ. Coll. of Med., 1907.....	1907	1908
Walker, L. K., Ahsoskie; Univ. of Md., 1911.....	1911	1917

HOKE COUNTY SOCIETY

President: Murray, R. L., Raeford; Univ. of Md., 1923.....	1923	1925
Secretary: Thomas, C. D., Sanatorium; Univ. of Indiana, 1926.....	1930	1930
Brown, G. W., Raeford (Hon.) Ky. School of Med., 1898.....	1900	1900
Eason, H. F., Sanatorium; Wash. Univ. Med. Sch., 1927; U. N. C.....	1927	1929
Jones, Julia M., Sanatorium; Duke Univ., 1935.....	1941	1942
Matheson, R. A., Raeford; Jefferson Med. Coll., 1926.....	1926	1928
McCain, P. P., Sanatorium; Univ. of Md., Coll. of P. & S., Balt, 1911.....	1914	1917
McLain, John E. G., Sanatorium; George Washington Univ., 1929.....	1941	1942
O'Briant, A. L., Raeford; Jefferson Med. Coll., 1920.....	1920	1922

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Peck, W. M., Sanatorium; Univ. of Iowa, 1937	1941	1942
Roper, W. H., Sanatorium; Univ. of Va., 1930.....	1940	1941

HYDE COUNTY SOCIETY

IREDELL-ALEXANDER COUNTIES SOCIETY

President: Talley, J. S., Troutmans; Univ. of N. C., 1909	1910	1917
Secretary: Shaw, L. R., Statesville; Med. Coll. of Va., 1930.....	1930	1931
Bell, A. E., Mooresville (Hon.); Univ. of Md.; Coll. of P. & S., 1897....	1897	1904
Clayton, M. B., Statesville; Univ. of Louisville, 1917.....	1933	1935
Crouch, T. D., Stony Point; Univ. of Md., 1910; N. C. Med. Coll., 1909	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913; U.N.C.....	1913	1915
Feezor, C. N., Mooresville; Temple Univ., 1937.....	1937	1940
Gibson, L. O., Statesville; N. C. Med. Coll., 1913.....	1913	1915
Goode, T. V., Statesville; Univ. Coll. of Med., 1912.....	1912	1916
Herman, Charles B., Statesville; Jefferson Med. Coll., 1923.....	1923	1925
Holbrook, J. Samuel, Statesville; Univ. of Pa., 1932.....	1932	1934
Little, Lonnie M., Statesville; Jeff. Med. Coll., 1925; U.N.C.....	1925	1927
McElwee, Ross S., Statesville (Hon.); Univ. of Md., 1909.....	1909	1910
McLaughlin, J. E., Troutmans (Hon.); Univ. of Md., 1886.....	1886	1896
McLelland, W. D., Mooresville; Jeff. Med. Coll., 1913.....	1913	1917
Rhyns, S. A., Statesville; N. C. Med. Coll., 1915.....	1915	1920
Robertson, J. M., Harmony; Temple Univ., 1932.....	1932	1934
Sharpe, Frank L., Statesville (Hon.); Univ. of N. C., 1904.....	1904	1905
Sloan, A. B., Mooresville; Med. Coll. of Va., 1924.....	1924	1926
Tatum, Roy C., Statesville; Jefferson Med. Coll., 1919.....	1919	1920
Taylor, G. W., Mooresville (Hon.); N. C. Med. Coll., 1906.....	1906	1907
Templeton, J. Y., Mooresville; Jeff. Med. Coll., 1912.....	1913	1927
Thurston, Asa, Taylorsville; Univ. of Md., 1909.....	1909	1914

JACKSON COUNTY SOCIETY

Nichols, Alvin A., Sylva (Hon.); Univ. of Nashville, 1898.....	1904	1904
Nichols, Asbury S., Sylva; Tenn. Med. Coll., 1906.....	1907	1913

JOHNSTON COUNTY SOCIETY

President: Lassiter, Will H., Selma; Med. Coll. of Va., 1938.....	1938	1939
Secretary: Grady, E. S., Smithfield; Tulane Univ., 1937.....	1937	1942
Aycock, F. M., Princeton; Med. Coll. of Va., 1921.....	1921	1926
Davidian, Vartan A., Smithfield; Kiev Univ., Russia, 1919.....	1929	1930
Duncan, S. A., Benson; Tulane, 1924; Wake Forest, 1921.....	1924	1925
Earp, R. E., Selma; Univ. of Pa., 1928.....	1928	1941
Fitzgerald, J. Herbert, Smithfield; Jeff. Med. Coll., 1920; U.N.C.....	1920	1922
Grady, Jas. C., Kenly (Hon.); Balt. Univ., 1887.....	1887	1890
Hinnant, Milford, Micro; Univ. of Md., 1912.....	1912	1913
Hocutt, Battle A., Clayton (Hon.); Univ. of N. C., 1906.....	1906	1906
Jackson, M. V., Princeton; Univ. of Md., 1930.....	1930	1937
McLemore, Geo. A., Smithfield (Hon.); Univ. of N. C., 1906.....	1906	1906
Rose, A. H., Smithfield (Hon.); Jeff. Med. Coll., 1906; U. N. C.....	1906	1906
Stanley, John H., Four Oaks (Hon.); Johns Hopkins, 1904; U.N.C.....	1904	1906
Upchurch, T. G., Smithfield; Duke Univ., 1932; U.N.C.....	1932	1935
Utley, H. H., Benson (Hon.); Balt. Med. Coll., 1906.....	1906	1907
Wharton, Watson, Smithfield; La. State Univ., 1937.....	1937	1937
Yates, R. F., Clayton; Emory Univ., 1935.....	1935	1938

JONES COUNTY SOCIETY

LEE COUNTY SOCIETY

President: McIver, Lynn (Hon.), Sanford; Kentucky Univ., 1901.....	1902	1902
Secretary: Blue, Waylon, Jonesboro; Med. Coll. of Va., 1925.....	1925	1926
Byerly, J. H., Sanford; Northwestern Univ., 1935.....	1936	1938
Chiles, Geo. C., Sanford; Med. Coll. of Va., 1926.....	1928	1928
Foster, J. F., Sanford; N. C. Med. Coll., 1916.....	1916	1919
Hartness, W. R., Jonesboro; Univ. of Louisville, 1938.....	1938	1939
James, Arthur A., Jr., Sanford; Univ. of Pa., 1932; U.N.C.....	1932	1936
Knight, Floyd L., Sanford; Univ. of Va., 1924.....	1925	1926

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Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921; U. N. C.....	1921	1924
Matthews, M. L., Sanford (Hon.); Univ. of N. C., 1903.....	1903	1904
Patterson, J. H., Broadway; Med. Coll. of Va., 1932.....	1932	1934
Sowers, R. G., Jonesboro; Univ. of Md., 1923.....	1923	1924

LENOIR COUNTY SOCIETY

President: West, C. F., Kinston; Univ. of Pa., 1917.....	1917	1920
Secretary: Parrott, John A., Kinston; Temple Univ., 1940.....	1940	1942
Boney, Elwood R., Kinston; Univ. of Pa., 1926; U.N.C.....	1926	1928
Carr, M. L., La Grange; Med. Coll. of Va., 1916.....	1916	1920
Cranz, Oscar W., Kinston; Med. Coll. of Va., 1931.....	1934	1936
Davis, Rachel D., Kinston; Women's Med. Coll. of Pa., 1932.....	1933	1934
Fuller, Henry Fleming, Kinston; Univ. of Pa., 1936.....	1936	1939
Hardy, Ira M., Kinston (Hon.); Med. Coll. of Va., 1901; U.N.C.....	1902	1902
Keiter, W. Eugene, Kinston; Washington Univ., 1931.....	1935	1935
Lee, Mike, Kinston; Tulane, 1926; Wake Forest, 1924.....	1926	1927
Lee, Thos. L., Kinston; Med. Coll. of Va., 1926.....	1926	1927
Moseley, Z. V., Kinston; Univ. Coll. of Med., 1913.....	1913	1914
Offutt, Vernon D., Kinston; Med. Coll. of Va., 1933.....	1935	1940
Parrott, M. C., Kinston; Tulane, 1917; U.N.C.....	1917	1919
Parrott, Wm. T., Kinston (Hon.); Tulane, 1897.....	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916.....	1917	1917
Pritchard, G. L., LaGrange; Univ. Coll. of Med., 1913.....	1913	1926
Reavis, Charles W., Kinston; Med. Coll. of Va., 1936.....	1936	1938
Ruffin, D. W., Pink Hill; Med. Coll. of Va., 1932.....	1932	1932
Sabiston, Frank, Kinston; Univ. of Md., 1918; U. N. C.....	1919	1926
Temple, R. Henry, Kinston; Univ. of Pa., 1936.....	1936	1938
Turrentine, Kilby P., Kinston; Rush Med. Coll., 1931; U.N.C.....	1932	1933
Tyndall, R. G. Kinston; Univ. of Pa., 1928; Wake Forest, 1926.....	1928	1931
West, B. C., Kinston; Univ. of Pa., 1924; U.N.C.....	1924	1926
Whitaker, Paul F., Kinston; Med. Coll. of Va., 1922; U.N.C.....	1922	1924
Wooten, Floyd P., Kinston; Jeff. Med. Coll., 1920.....	1920	1923

LINCOLN COUNTY SOCIETY

President: Cornwell, A. M., Lincolnton; Geo. Washington Univ., 1927.....	1927	1928
Secretary: McGuire, B. B., Lincolnton; Jeff. Med. Coll., 1918; U. N. C.....	1919	1928
Bandy, W. G., Lincolnton; Vanderbilt Univ., 1908.....	1912	1914
Costner, W. V., Lincolnton; Jeff. Med. Coll., 1924; U.N.C.....	1925	1927
Crowell, L. A., Jr., Lincolnton; Tulane, 1930; U.N.C.....	1930	1930
Crowell, L. A., Sr., Lincolnton (Hon.); Balt. Med. Coll., 1892.....	1892	1898
Davidson, John E. S., Charlotte (Hon.); Univ. of Md., 1894.....	1898	1898
Edwards, Forrest D., Lawndale; Atlanta Med. Coll., 1914.....	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916; U.N.C.....	1916	1917
Fitzgerald, J. H., Jr., Lincolnton; Univ. of Va., 1938.....	1940	1941
Gamble, J. R., (Hon.), Lincolnton; Univ. of Tenn., 1911.....	1911	1912
Hoover, C. H., Crouse (Hon.); Balt. Med. Coll., 1903; Chattanooga Med. Coll., 1900.....	1903	1903
Jacocks, W. P., Delhi, India; Univ. of Pa., 1911; U. N. C.....	1911	1913
Shellum, O. W., Denver; N. C. Med. Coll., 1909.....	1909	1913
Wilson, S. A., Lincolnton; Emory Univ., 1937.....	1937	1940

MACON-CLAY COUNTIES SOCIETY

Angel, Edgar, Franklin; Jefferson Med. Coll., 1928.....	1932	1932
Angel, Furman, Franklin; Jeff. Med. Coll., 1918; U. N. C.....	1923	1924
Killian, Frank M., Franklin; Univ. of Louisville, 1929.....	1929	1930
Rogers, W. A., Franklin (Hon.); Univ. of Nashville, 1898.....	1898	1898

MADISON COUNTY SOCIETY

McElroy, J. L., Marshall; Washington Univ., 1930.....	1930	1932
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MARTIN-WASHINGTON-TYRRELL COUNTIES SOCIETY

President:		
Secretary: Lewis, S. V., Plymouth; Med. Coll. of Va., 1916.....	1916	1923
Brown, Victor E., Williamston; Syracuse Coll. of Med., 1935.....	1936	1937
Chaplin, S. C., Columbia; Jeff. Med. Coll., 1922; Wake Forest, 1920.....	1931	1933
Furgurson, E. W., Plymouth; Syracuse, 1936.....	1937	1938
McGowan, Claudius, Plymouth; Med. Coll. of Va., 1917.....	1917	1922
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890.....	1890	1898
Papineau, A., Plymouth; Univ. of Pa., 1931.....	1933	1934

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Rhodes, James S., Williamston (Hon.); Med. Coll. of Va., 1906.....	1906	1907
Walker, E. T., Williamston; Univ. of Kansas, 1937.....	1939	1940
Ward, Jesse E., Robersonville (Hon.); Univ. of Md., 1904; U.N.C.....	1904	1905
Ward, Vernon Albert; Robersonville; Jeff. Med. Coll., 1908; U.N.C.....	1908	1914
Ward, Walter E., Robersonville; Med. Coll. of Va., 1940.....	1940	1942

MCDOWELL COUNTY SOCIETY

President: Wood, Frank, Marion; Univ. of Pa., 1928.....	1931	1932
Secretary: Hagna, L. W., Marion; Univ. of Pa., 1936.....	1938	1940
Butt, R. B., Marion; Emory Univ., 1920.....	1920	1921
Hemphill, C. H., Black Mountain; Univ. of Md., 1913.....	1913	1916
Johnson, John B., Old Fort; Univ. of Louisville, 1905.....	1914	1914
Jonas, John F., Marion (Hon.); Balt. Med. Coll., 1903.....	1903	1903
Justice, Gaston B., Marion (Hon.); Coll. of P. & S., Atlanta, 1907; U. N. C.	1907	1908
Kirby, Guy S., Marion (Hon.); Univ. Coll. of Med., 1897.....	1896	1903
McBee, Paul, Marion; Med. Coll. of Va., 1930; Wake Forest, 1928.....	1930	1933
McIntosh, D. M., Old Fort (Hon.); Med. Coll. of Va., 1904.....	1907	1908
McIntosh, D. M., Jr., Marion; Univ. of Pa., 1933.....	1935	1936
Miller, J. F., Marion; Med.-Chi. Phila., 1906.....	1915	1919
Wood, Martha, Marion; Univ. of Pa., 1928; U.N.C.....	1934	1935

MECKLENBURG COUNTY SOCIETY

President: Warramaker, Edward J., Jr., Charlotte; Univ. of Pa., 1921.....	1924	1925
Secretary: *Gilmour, Monroe T., Charlotte; Harvard, 1936.....	1940	1941
Adams, James R., Charlotte; Univ. of Va., 1928.....	1932	1933
Alexander, J. M., Charlotte; McGill Univ., 1934.....	1934	1937
Alexander, James R., Charlotte (Hon.); Univ. of Md., 1894.....	1894	1899
Allan, William, Charlotte (Hon.); Coll. of P. & S., Balt., 1906.....	1906	1908
Ashe, J. R., Charlotte; Columbia Univ., 1911.....	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917; U.N.C.....	1917	1919
Austin, Frederick D., Jr., Charlotte; Vanderbilt Univ., 1937.....	1937	1939
Baker, T. W., Charlotte; Univ. of Pa., 1931.....	1931	1938
Barron, A. A., Charlotte (Hon.); Vanderbilt Univ., 1909.....	1910	1911
Baxter, Oscar Dixon, Charlotte; Jeff. Med. Coll., 1924.....	1924	1929
Bellows, Rowland T., Charlotte; Cornell, 1930.....	1940	1941
Black, Geo. William, Charlotte; Med. Coll. of Va., 1924.....	1924	1925
Blair, Andrew, Charlotte; Univ. of Pa., 1924.....	1925	1926
Bost, T. C., Charlotte; Geo. Washington Univ., 1915.....	1920	1921
Bradford, W. B., Charlotte; Univ. of Pa., 1932.....	1932	1937
Bradford, W. Z., Charlotte; Univ. of Pa., 1928.....	1928	1930
Brenizer, A. G., Charlotte (Hon.); Johns Hopkins, 1908; Univ. of Heidelberg; U. N. C.	1911	1911
Britt, C. S., Beaufort, S. C.; Emory Univ., 1920.....	1925	1926
Bunch, Charles, Charlotte; Univ. of S. C., 1931.....	1931	1935
Byrnes, Thos. H., Charlotte; Med. Coll. of S. C., 1926.....	1932	1932
Choate, A. B., Charlotte; Med. Coll. of Va., 1929.....	1929	1933
Cornell, W. S., Charlotte; Emory Univ., 1931.....	1938	1938
Craven, Thomas W., Huntersville; Jefferson Med. Coll., 1917.....	1917	1919
Craven, W. W., Charlotte (Hon.); Univ. of Md., 1903; U. N. C.	1904	1911
Daniel, Walter E., Charlotte; Med. Coll. of Va., 1931.....	1938	1938
De Armon, J. McC., Charlotte (Hon.); Univ. of Md., 1886.....	1886	1887
Elliott, J. A., Charlotte; Univ. of Mich., 1914.....	1919	1920
Faison, Elias, Charlotte; Emory Univ., 1929.....	1929	1933
Ferguson, R. T., Charlotte; Med. Coll. of Va., 1906.....	1909	1922
Fleming, L. E., Charlotte; Univ. of Pa., 1931; Wake Forest, 1929.....	1931	1934
Franklin, Ernest W., Charlotte; Univ. of Pa., 1930; U. N. C.	1930	1932
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915.....	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chiru., Phila., 1913.....	1922	1923
Gav, Charles H., Charlotte; Duke Univ., 1933.....	1936	1938
Gibbon, James W., Charlotte; Jeff. Med. Coll., 1918.....	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887.....	1887	1888
Hamer, W. A., Charlotte; Univ. of Md., 1930; Wake Forest, 1928.....	1930	1932
Hand, Edgar H., Charlotte; N. C. Med. Coll., 1907.....	1907	1913
Hart, V. K., Charlotte; Univ. of Pa., 1921.....	1924	1925
Hawes, Aubrey, Charlotte; Vanderbilt Univ., 1933.....	1939	1939
Herndon, Claude Nash, Jr., Winston-Salem; Jeff. Med. Coll., 1939.....	1939	1941
Hipp, Edw. R., Charlotte; Univ. of Va., 1918.....	1920	1921
Holton, Thos. J., Charlotte; Emory Univ., 1909.....	1925	1926

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Hovis, L. W., Charlotte (Hon.); N. C. Med. Coll., 1904; U.N.C.	1904	1906
Hunt, J. S., Charlotte; Vanderbilt Univ., 1929	1932	1933
Jacobs, J. E., Charlotte; Univ. of Nebraska, 1935	1939	1940
Johnston, J. G., Charlotte; Vanderbilt Univ., 1899	1913	1916
Jones, O. H., Charlotte; Columbia Univ., 1933	1933	1937
Kelly, Luther W., Charlotte; Univ. of Va., 1924	1926	1927
Kennedy, John P., Charlotte; Jeff. Med. Coll., 1915	1915	1920
Kimmelsteil, Paul, Charlotte; Tuebingen, Germany, 1922		1941
King, Parks M., Charlotte (Hon.); Bellevue Med. Coll., 1902	1902	1904
Kossove, Albert A., Charlotte; Med. Coll. of Va., 1939	1940	1941
Kossove, Irene L., Charlotte; Med. Coll. of Va., 1939	1940	1941
Lafferty, Robert H., Charlotte (Hon.); N. C. Med. Coll., 1906	1906	1906
Leinbach, Robert F., Charlotte (Hon.); Univ. of Pa., 1907; U.N.C.	1907	1910
MacConnell, John W., Davidson (Hon.); Univ. of Md., 1907	1908	1909
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890	1891	1919
Massey, C. C., Charlotte; Jeff. Med. Coll., 1923; U.N.C.	1923	1925
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Matthews, Wm. C., Davidson; Univ. of Va., 1937	1939	1939
Mayer, Walter B., Charlotte; Univ. of Pa., 1930	1932	1933
McCoy, Thos. M., Charlotte (Hon.); N. C. Med. Coll., 1905	1906	1906
McDonald, A. M., Charlotte; Univ. of Pa., 1928; U.N.C.	1935	1937
McKay, Hamilton W., Charlotte; Jeff. Med. Coll., 1910; N. C. Med. Coll., 1909	1911	1913
McKay, Robert W., Charlotte; Johns Hopkins, 1923	1928	1928
McKnight, R. B., Charlotte; Univ. of Pa., 1920; U.N.C.	1920	1923
McLaughlin, C. S., Charlotte (Hon.); Univ. of Md., 1896	1896	1903
McLaughlin, C. S., Jr., Charlotte; Univ. of Tenn., 1935	1937	1937
McLean, E. K., Charlotte; Univ. of Texas, 1919	1927	1928
McPhail, L. D., Charlotte (Hon.); Univ. of Md., 1900; U.N.C.	1900	1902
Miller, Oscar L., Charlotte; Atlanta Coll. of P. & S., 1912	1921	1922
Montgomery, J. C., Charlotte; Univ. of Pa., 1932	1935	1936
Moore, Alexander W., Charlotte; Bellevue Med. Coll., 1902; Univ. of Va., 1901	1912	1913
Moore, Oren, (Hon.), Charlotte; N. C. Med. Coll., 1911	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923	1924	1925
Motley, Fred Elliott, Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, H. Stokes, Charlotte (Hon.); N. C. Med. Coll., 1902; Jeff. Med. Coll., 1903	1902	1904
Munroe, H. Stokes, Jr., Charlotte; Duke Univ., 1935	1937	1940
Myers, Alonzo, Charlotte; Bellevue Med. Coll., 1916; N. C. Med. Coll., 1911	1911	1920
Myers, John Q., Charlotte (Hon.); N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte (Hon.); Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med. Coll., 1919	1921	1922
Naumoff, Philip, Charlotte; Duke Univ., 1937	1939	1939
Neblett, H. C., Charlotte; Med. Coll. of Va., 1914	1921	1929
Newell, Leon B., Charlotte (Hon.); Univ. of N. C., 1905	1905	1906
Newton, Howard L., Charlotte; Northwestern Univ., 1921	1923	1925
Northington, J. M., Charlotte (Hon.); Med. Coll. of Va., 1905	1917	1920
Nowlin, Preston, Charlotte; Univ. of Va., 1924	1909	1909
Peeler, Clarence N., Charlotte (Hon.); N. C. Med. Coll., 1906	1929	1930
Pettus, W. H., Jr., Charlotte; Cornell, 1937	1906	1908
Pitts, Wm. R., Charlotte; Harvard Univ., 1933	1941	1942
Query, R. Z., Jr., Charlotte; Duke Univ., 1934	1939	1940
Rankin, Watson S., Charlotte (Hon.); Univ. of Md., 1901	1937	1938
Ranson, J. Lester, (Hon.), Charlotte; N. C. Med. Coll., 1911;	1901	1901
Ray, F. L., Charlotte; Univ. of Va., 1919; Wake Forest	1911	1912
Reid, C. Graham, Charlotte; Univ. of Pa., 1935	1919	1922
Robinson, C. W., Charlotte; Univ. of Pa., 1930; U.N.C.	1938	1939
Ross, Otho B., (Hon.), Charlotte; Univ. of Pa., 1909; U.N.C.	1930	1932
Ross, T. W., Charlotte; Jeff. Med. Coll., 1927; U.N.C.	1909	1912
Sanger, P. W., Charlotte; Vanderbilt Univ., 1931	1927	1930
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914; Wake Forest, 1912	1937	1938
Seay, Hillis L., Huntersville; Vanderbilt Univ., 1930	1914	1920
Selby, W. E., Charlotte; Temple Univ., 1934; U.N.C.	1933	1934
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1934	1936
Shull, J. Rush, Charlotte; Univ. of Pa., 1910; U.N.C.	1921	1922
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1910	1913
Smith, F. C., Charlotte; Jeff. Med. Coll., 1921; U.N.C.	1913	1920
Sparrow, Thos. DeL., Charlotte; Univ. of Pa., 1920	1921	1925
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1920	1923
	1919	1921

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Summerville, W. M., Charlotte; Emory Univ., 1936; U.N.C.	1936	1937
Taylor, Andrew D., Charlotte; Univ. of Maryland, 1934	1934	1937
Teasdale, L. R., Charlotte; Dalhousie Univ., 1936	1936	1940
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte; Univ. of Mich., 1918	1920	1920
Townsend, M. L., Society Hill, S. C.; Indiana Med. Coll., 1906	1912	1913
Tuggle, Alan, Charlotte; Univ. of Louisville, 1936	1940	1941
Tydemann, F. W. L., San Francisco, Cal.; N. C. Med. Coll., 1912	1912	1918
Welton, David G., Charlotte; Univ. of Wisconsin, 1935	1939	1939
Whisnant, Albert M., Charlotte (Hon.); Coll. of P. & S., Balt., 1893	1893	1899
White, Thomas Preston, Charlotte; Univ. of Pa., 1922	1924	1925
Williams, McChord, Charlotte; Harvard, 1937	1937	1942
Winkler, Harry, Charlotte; Rush Med. Coll., 1929	1931	1931

* Elected to replace Dr. R. Z. Query, Jr., who was called into Military Service.

MITCHELL-YANCEY COUNTIES SOCIETY

President: Williams, L. L., Spruce Pine; Med. Coll. of S. C., 1880	1924	1927
Secretary: Michal, Mary B. H., Spruce Pine; Yale, 1928	1938	1939
Bennett, W. L., Burnsville; Lincoln Memorial Univ., 1911	1932	1933
Cheadle, C. M., Burnsville; Keokuk Med. Coll., 1898	1919	1921
Gouge, A. E., Bakersville; Med. Coll. of Va., 1917	1917	1920
Jones, R. O., Burnsville; Duke Univ., 1935	1938	1942
Peterson, C. A., Spruce Pine (Hon.); N. C. Med. Coll., 1907	1907	1908

MONTGOMERY COUNTY SOCIETY

Eckerson, Charles Neil, Troy; Med. Coll. of Va., 1935	1935	1942
Harris, W. T., Troy; Med. Coll. of Va., 1925	1926	1927
Koogler, B. Robert, Star; Ohio State Med. Coll., 1938	1939	1941
McMillan, J. M., Candor (Hon.); P. & S., Atlanta, 1909	1909	1911
Rankin, Pressly R. (Hon.), Mt. Gilead; N. C. Med. Coll., 1910	1910	1912
Thompson, A. F. (Hon.), Troy; Med. Coll. of Indiana, 1895	1895	1904

MOORE COUNTY SOCIETY

President: McLeod, A. H. (Hon.), Aberdeen; Baltimore Med. Coll., 1896	1896	1904
Secretary: Rosser, R. G., Yass (Hon.); N. C. Med. Coll., 1909	1909	1911
Blue, A. McN., Carthage; Tulane, 1915	1916	1918
Bowen, J. P., Aberdeen; Univ. of Md., 1929	1932	1934
Bowman, H. E., Aberdeen (Hon.); N. C. Med. Coll., 1904	1904	1905
Chester, P. J., Southern Pines; N. C. Med. Coll., 1913	1913	1920
Davis, J. F., Hemp; Med. Coll. of Va., 1912	1912	1914
Drake, B. M., Carthage; Vanderbilt Univ., 1931	1931	1941
Felton, R. L., Jr., Carthage; Univ. of Pa., 1927; U.N.C.	1927	1930
Grier, C. T., Carthage; N. C. Med. Coll., 1910	1912	1913
Kemp, Malcolm Drake, Pinebluff; Washington Univ., 1930; U.N.C.	1930	1936
Marr, M. W., Pinehurst; Tufts, 1907	1909	1915
McLeod, Vida C., Southern Pines; Baylor Univ., 1919	1931	1931
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915; U.N.C.	1915	1916
Monroe, C. R., Pinehurst; Univ. of Md., 1924; U.N.C.	1925	1930
Mudgett, W. C., Southern Pines (Hon.); Md. Med. Coll., 1903	1908	1908
Owens, Francis Leroy, Pinehurst; Duke Univ., 1934	1935	1938
Street, M. E., Glendon (Hon.); Coll. of P. & S., Balt., 1893	1893	1902
Street, M. E., Jr., Glendon; Duke Univ., 1937	1941	1942
Stutz, M. Greer, Southern Pines; Med. Coll. of Va., 1934	1934	1936
Symington, John, Carthage; Univ. of Md., 1902	1927	1928
Willcox, J. W. (Hon.), West End; Univ. of N. C., 1906	1906	1906

NASH—SEE EDGECOMBE-NASH

NEW HANOVER COUNTY SOCIETY

President: Hare, R. B., Wilmington; Med. Coll. of S. C., 1930	1933	1934
Secretary: Graham, Charles P., Wilmington; Harvard, 1932	1932	1937
Anderson, E. C., Wilmington; Northwestern Univ., 1937	1937	1939
Barefoot, Graham B., Wilmington; Jeff. Med. Coll., 1923; Wake Forest, 1921	1923	1924
Barefoot, Wm. Frederick, Wilmington; Tulane, 1934	1934	1935

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Bellamy, Robert H., Wilmington (Hon.); Jeff. Med. Coll., 1902; U.N.C.	1902	1902
Black, Paul A. L., Wilmington; Coll. of Med. Evangelists, 1932	1935	1938
Brown, Landis G., Southport; Northwestern Univ., 1934	1935	1938
Bulluck, Ernest S., (Hon.), Wilmington; Univ. of Md., 1911	1911	1912
Carson, Merle, Wilmington; Vanderbilt Univ., 1938	1938	1942
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Coleman, H. R., Wilmington; Univ. of Va., 1929	1941	1942
Cranmer, J. B., Wilmington (Hon.); Univ. of N. C., 1905	1905	1906
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916; U.N.C.	1916	1918
Davis, C. B., Wilmington; Univ. of Pa., 1935	1935	1939
Dosher, Wm. S., Wilmington; Med. Coll. of Va., 1930	1930	1934
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919; U.N.C.	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1916	1921
Fales, Robert, Wilmington; Jeff. Med. Coll., 1932	1932	1936
Farthing, J. Watts, Wilmington; Univ. of Pa., 1933; Univ. of Miss., 1938	1938	1939
Fergus, Leroy, Southport; Med. Coll. of Va., 1935	1937	1938
Freeman, Jere D., Wilmington; Med. Coll. of Va., 1918	1921	1922
Harriss, Andrew H., Wilmington (Hon.); Med.-Chir. Coll., Phila., 1893	1892	1894
Haynes, J. W., Shallotte; Med. Coll. of S. C., 1937	1938	1942
Hoggard, J. T., Wilmington; Univ. Coll. of Med., 1906	1906	1922
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1917
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920; U.N.C.	1920	1921
Koonce, Donald B., Wilmington; Univ. of Pa., 1929	1929	1934
Koonce, S. Everett, Wilmington (Hon.); Coll. of P. & S., Balt., 1896	1896	1900
Lancaster, Wm. Jesse, Wilmington; Atlanta School of Med., 1911	1935	1935
Lounsbury, J. B., Wilmington; Yale, 1935	1941	1942
McEachern, Duncan, Wilmington; Med. Coll. of Va., 1932	1932	1935
Mebane, W. C., Jr., Wilmington; Univ. of Md., 1931; U.N.C.	1932	1934
Moore, W. H., Wilmington (Hon.); Jeff. Med. Coll., 1910; U. N. C.	1910	1911
Murchison, D. R., Wilmington; Johns Hopkins, 1916	1922	1923
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Rodman, R. B., Wilmington; Medical Coll. of S. C., 1928	1928	1930
Rosenbaum, M. M., Shallotte; Univ. of Buffalo, 1934	1936	1937
Sidbury, J. B., Wilmington; Columbia Univ., 1912	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914; U.N.C.	1914	1920
Sullivan, Victor T., Wilmington; Med. Coll. of Va., 1931	1931	1934
Walker, Elmer P., Wilmington; Emory Univ., 1936	1936	1941
Wessell, John C., Wilmington (Hon.); Univ. of Md., 1900	1900	1900

NORTHAMPTON COUNTY SOCIETY

Fleetwood, Jos. A., Conway; Tulane Univ., 1921	1921	1923
Lister, J. L., Jackson (Hon.); Med. Coll. of Va., 1896	1896	1909
Outland, R. B., Rich Square; Univ. of Pa., 1932	1933	1936
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915	1915	1917

ONslow COUNTY SOCIETY

Bryan, Lorenzo D. (Hon.), Sneads Ferry; Tulane Univ., 1910	1910	1911
Corbett, J. P., Swansboro; Wash. Univ. Sch. of Med., 1928; U. N. C.	1928	1930
Gurganus, G. E., Jacksonville; Temple Univ., 1937	1937	1939
Henderson, John P., Jacksonville; Med. Coll. of Va., 1918	1919	1921
Kendall, John H., Richlands; Coll. of Med. Evangelists, 1934	1935	1935
Stevens, H. W., Jacksonville; Jeff. Med. Coll., 1938	1938	1940
Sutton, Carl W., Richlands (Hon.); Tulane, 1905; U.N.C.	1905	1907
Turlington, W. T., Jr., Jacksonville; Univ. of N. Y., 1929	1929	1930

ORANGE—SEE DURHAM-ORANGE

PAMLICO COUNTY SOCIETY

President: Dees, D. A., Bayboro (Hon.); Balt. Med. Coll., 1903	1903	1905
Secretary: Purdy, J. J., Oriental; Med. Coll. of Va., 1900	1914	1915
McCotter, St. Elmo, Bayboro (Hon.); Coll. of P. & S., Atlanta, 1908	1908	1909

PASQUOTANK-CAMDEN-CURRITUCK-DARE COUNTIES SOCIETY

President: Walker, H. D. (Hon.), Elizabeth City; Univ. of Md., 1902	1902	1902
Secretary: Bonner, John H., Elizabeth City; Med. Coll. of Va., 1932	1932	1941
Bailey, M. H., Elizabeth City; Northwestern Univ., 1931	1933	1940

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Barkwell, J. H., Weeksville; Atlanta Sch. of Med., 1908	1924	1925
Fearing, Isaiah, Elizabeth City (Hon.); Coll. of P. & S., Balt, 1896....	1896	1904
Gill, Jos. A., Elizabeth City; Syracuse Univ., 1932	1932	1936
Griggs, W. T., Poplar Branch (Hon.); Univ. of Va., 1896	1896	1901
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1915
Owens, Z. D., Elizabeth City; Univ. of Md., 1930	1930	1940
Parker, J. J., Elizabeth City		1942
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Salters, Fred H., Elizabeth City; S. C. Med. Coll., 1935	1939	1940
Smith, E. B., Elizabeth City; Univ. of Va., 1939	1940	1940
White, W. H. C., Elizabeth City; Univ. of Va., 1922	1929	1930

PENDER COUNTY SOCIETY

Taylor, W. I. (Hon.), Burgaw; N. C. Med. Coll., 1902	1904	1905
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PERQUIMANS—SEE CHOWAN-PERQUIMANS

PERSON COUNTY SOCIETY

President: Beam, H. M., Roxboro; Columbia Univ., 1918	1918	1919
Secretary: Fitzgerald, J. D., Roxboro; Duke Univ., 1934	1934	1937
Gentry, Geo. W., Roxboro (Hon.); Univ. of N. C., 1910	1910	1911
Hedgpeth, E. M., Roxboro; Northwestern Univ., 1936; Wake Forest....	1937	1938
Love, Bedford E., Roxboro (Hon.); Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale (Hon.); Univ. of N. C., 1906	1907	1908
Nichols, Austin F., Roxboro (Hon.); Univ. of N. C., 1908	1908	1909
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: Armistead, D. B., Greenville; Med. Coll. of Va., 1931	1935	1936
Secretary: *Brooks, Fred P., Greenville; Univ. of Mich., 1933	1933	1935
Aycock, E. Burtis, Greenville; McGill Univ., 1936	1936	1940
Barrett, J. M., Greenville; Univ. of Pa., 1926; U.N.C.	1926	1928
Basnight, Thomas G., Stokes (Hon.); Univ. of Md., 1904; U.N.C.	1905	1907
Beasley, E. B., Fountain; Univ. of Pa., 1911; U.N.C.	1911	1915
Brown, W. M. B., Greenville; Med. Coll. of Va., 1929	1929	1931
Crisp, S. M., Greenville; Univ. of Pa., 1923; U.N.C.	1923	1926
Dixon, G. G., Ayden; Med. Coll. of Va., 1915; U.N.C.	1915	1917
Ennett, N. Thomas, Greenville; Med. Coll. of Va., 1907	1932	1934
Frizzelle, M. T., Ayden (Hon.); Univ. Coll. of Med., 1907	1907	1908
Garrenton, Connell, Bethel; Univ. of Pa., 1935; Wake Forest, 1933....	1935	1937
Haar, F. B., Greenville; Jefferson Med. Coll., 1932	1932	1935
Hammond, A. F., Grifton; Jefferson Med. Coll., 1934	1934	1937
Hawes, J. B., Greenville; Univ. of Va., 1932	1937	1938
Mewborn, J. M., Farmville; Med. Coll. of Va., 1932; U.N.C.	1932	1935
Moore, D. L., Winterville; Jefferson Med. Coll., 1936	1936	1938
Pace, K. B., Greenville; Jeff. Med. Coll., 1914; U.N.C.	1914	1920
Skinner, Louis Cotton, Greenville; (Hon.); Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914	1916	1920
Smith, R. C., Ayden; Jefferson Med. Coll., 1923	1923	1926
Taylor, Chas. W., Hollister; Med. Coll. of Va., 1933	1933	1935
Tucker, Earl Van, Grifton; Med. Coll. of Va., 1930	1930	1935
Tyson, J. J., Ayden; Med. Coll. of Va., 1928	1928	1930
Ward, Needham E., Greenville; Duke Univ., 1932; U.N.C.	1934	1934
Watson, Thomas M., Greenville; Tulane, 1919; Wake Forest	1919	1920
Williams, R. T., Farmville; Vanderbilt Univ., 1937	1937	1942
Winstead, J. L., Greenville; Univ. of Md., 1925; U.N.C.	1925	1930
Wooten, W. I., Greenville; Jeff. Med. Coll., 1920; U. N. C.	1920	1921

* Elected to replace Dr. E. Burtis Aycock, who was called into Military Service.

POLK COUNTY SOCIETY

President: Palmer, M. C., Tryon; Med. Coll. of S. C., 1910	1911	1914
Secretary: *Preston, John Z., Tryon; Temple Univ., 1934	1935	1937
Jervey, A. J., Tryon; Med. Coll. of S. C., 1905	1923	1926
Jervey, William St. J., Tryon; Temple Univ., 1939	1939	1942
Smith, D. L., Saluda; Med. Coll. of S. C., 1903	1926	1927
Woody, J. W. A., Tryon; Univ. of Pa., 1937	1939	1940

* Elected to replace Dr. J. W. A. Woody, who was called into Military Service.

RANDOLPH COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Barnes, Tiffany, Asheboro; Med. Coll. of Va., 1925	1925	1927
Secretary: Craven, F. C., Asheboro; Univ. of Md., 1913	1913	1914
Barnes, Dempsey, Asheboro; Med. Coll. of Va., 1925	1925	1927
Cannon, Eugene B., Asheboro; Vanderbilt, 1937	1937	1941
Fritz, J. L., Asheboro; Temple Univ., 1936; U.N.C.	1936	1938
Griffin, H. L., Asheboro; Med. Coll. of Va., 1926	1926	1928
Hubbard, Charles C., Farmer (Hon.); Jeff. Med. Coll., 1888	1890	1900
Joyner, Geo. W., Asheboro; Duke Univ., 1932	1937	1938
Redding, Alex. H. (Hon.), Cedar Falls; Coll. of P. & S., Baltimore, 1887	1889	1900
Soady, J. H., Asheboro; McGill Univ., 1903; Toronto Univ., 1905	1924	1926
Sumner, G. H., Asheboro; Tulane, 1923; U.N.C.	1923	1924
Sykes, R. P., Asheboro; Tulane Univ., 1929	1929	1931

RICHMOND COUNTY SOCIETY

President: James, W. D., Jr., Hamlet; La. State Med. Center, 1941	1941	1942
Secretary: Henry, T. Boyce, Rockingham; Columbia Univ., Coll. of P. & S., N. Y., 1917; U.N.C.	1920	1921
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Caddell, G. C., Hoffman; N. C. Med. Coll., 1912	1912	1930
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Garrison, R. B., Hamlet; Univ. of Md., 1933; U.N.C.	1933	1935
Hatcher, M. A., Hamlet; Med. Coll. of Va., 1918	1920	1921
Howell, W. L., (Hon.), Ellerbe; N. C. Med. Coll., 1910	1910	1912
James, W. D., Hamlet (Hon.); Jeff. Med. Coll., 1908; U.N.C.	1908	1910
Kinsman, Henry F., Hamlet (Hon.); Univ. of Vermont, 1894	1897	1904
Long, Z. F., Rockingham; Univ. of Pa., 1928; U.N.C.	1928	1930
Milham, C. G., Hamlet; Jeff. Med. Coll., 1927; U.N.C.	1927	1930
Nicholson, N. G., Jr., Rockingham; N. C. Med. Coll., 1917	1917	1920
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Webb, W. P. (Hon.), Rockingham; Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President: Hardin, E. R., Lumberton; Univ. of Ga., 1911	1915	1920
Secretary: Allen, G. C., Lumberton; Rush Med. Coll., 1932	1933	1934
Baker, Horace M., Lumberton; Harvard Univ., 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912; U.N.C.	1912	1913
Bender, John, Red Springs; Coll. of P. & S., Boston, 1935	1937	1939
Benson, N. O., Lumberton; Univ. of Ga., 1930	1933	1934
Biggs, J. L., Lumberton; Northwestern Univ., 1932	1937	1938
Bowman, E. L., Lumberton; Med. Coll. of Va., 1914	1914	1916
Britt, J. N., Lumberton; Atlanta Med. Coll., 1914	1923	1924
Bullock, D. D., Rowland; Med. Coll. of S. C., 1920	1927	1939
Carmichael, Thaddeus W., Rowland; Univ. of Ky., 1904	1911	1919
Croom, R. D., Jr., Maxton; Med. Coll. of Va., 1934	1934	1937
Currie, D. S., Parkton (Hon.); N. C. Med. Coll., 1906	1906	1906
Hedgpeth, L. R., Lumberton; Univ. of Md., 1933; Wake Forest	1933	1934
Hedgpeth, Wm. Carey, Lumberton; Northwestern Univ., 1933	1933	1936
Hodgin, H. H., Red Springs (Hon.); N. C. Med. Coll., 1906; Univ. of Md., 1905	1906	1906
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910; U.N.C.	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920; Wake Forest	1920	1922
Johnson, Thomas C., Lumberton (Hon.); Med. Coll. of Va., 1903	1903	1903
Kinlaw, M. C., Pembroke; Temple Univ., 1935	1936	1938
Knox, John, Lumberton (Hon.); Univ. of Md., 1906	1907	1907
Lihn, Henry, Fairmont; Jeff. Med. Coll., 1938	1940	1940
Martin, J. A., Lumberton; Med. Coll. of Va., 1915	1915	1917
Martin, T. A., Maxton; Univ. of Md., 1931	1939	1941
McAlister, H. A., Lumberton; Duke Univ., 1937	1937	1940
McClelland, Joseph O., Maxton; Med. Coll. of Va., 1908	1912	1913
McGrath, F. B., Lumberton; Northwestern Univ., 1933	1937	1938
McIntyre, Stephen, Lumberton; Jefferson Med. Coll., 1928	1928	1930
McMillan, R. D. (Hon.), Red Springs; Univ. of Md., 1910; U.N.C.	1911	1912
Nash, J. Fred, St. Pauls; N. C. Med. Coll., 1914	1914	1916
Ricks, Leonard E., Fairmont (Hon.); Med. Coll. of Va., 1896	1896	1898
Smith, John McNeill, Rowland (Hon.); Jeff. Med. Coll., 1908; U.N.C.	1908	1909
Townsend, R. G., St. Pauls; Tulane, 1927	1927	1934
Weinstein, M. H., Fairmont; Northwestern Univ., 1936	1937	1938
Weinstein, R. L., Fairmont; Jeff. Med. Coll., 1936	1936	1938

ROCKINGHAM COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Ray, S. P., Leaksville; Univ. of Pa., 1929	1929	1931
Secretary: Price, H. H., Draper; Temple Univ., 1938	1938	1940
Andes, T. E., Leaksville; Temple Univ., 1940		1942
Barham, B. Francis, Mavodan; Washington Univ., 1939	1939	1941
Casteen, Kenan, Leaksville; Bellevue Med. Coll., 1918; Wake Forest, 1916	1919	1921
Cox, A. M., Madison; Med. Coll. of Va., 1932	1932	1938
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911; U.N.C.	1911	1913
Dillard, G. P., Draper; Bennett Med. Coll., 1916	1916	1919
Ferneyhough, W. T., Reidsville; Univ. of Md., 1916	1926	1927
Fetzer, Paul W., Reidsville; Univ. of Va., 1916; U.N.C.	1916	1920
Forbes, T. E., Madison; Jefferson Med. Coll., 1940	1940	1942
Fryer, Douglas H., Sprav; Univ. of Western Ontario, 1933	1940	1941
Fulp, J. F., Stoneville; Duke Univ., 1935	1937	1940
Hester, William S., Reidsville; Jeff. Med. Coll., 1926; U.N.C.	1929	1930
Johnson, G. F., Spray; Jeff. Med. Coll., 1934	1934	1938
Johnson, W. A., Reidsville (Hon.); N. C. Med. Coll., 1907	1909	1910
Matthews, Wm. W., Leaksville; Chicago Coll. of Med. and Surgery, 1913	1915	1916
McAnally, James McG., Reidsville; Univ. of Pa., 1927; U. N. C.	1927	1928
McGehee, John Wm., Reidsville (Hon.); Univ. of Md., 1904	1904	1905
Ray, John B., Leaksville (Hon.); Balt. Med. Coll., 1898	1898	1898
Tuttle, A. F., Spray (Hon.); N. C. Med. Coll., 1901	1901	1906
Tyner, Carl V., Leaksville; Bellevue Med. Coll., 1916; Wake Forest, 1914	1916	1919
Watson, Paul S., Madison; Med. Coll. of S. C., 1928	1928	1928
Wilson, Newton G., Madison; N. C. Med. Coll., 1914	1914	1914

ROWAN-DAVIE COUNTIES SOCIETY

President: McCutchan, Frank, Salisbury; Univ. of Va., 1920	1927	1928
Secretary: Field B Lewis, Salisbury; Med. Coll. of Va., 1931	1933	1939
Armstrong, C. W., Salisbury; Univ. of Md., 1914	1914	1915
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Brown, Clarence E., Salisbury; N. C. Med. Coll., 1918	1920	1921
Busby, G. F., Salisbury; Johns Hopkins, 1932	1932	1936
Busby, J. G., (Hon.), Salisbury; Univ. of Md., 1904	1904	1905
Clement, Edward B., (Hon.), Salisbury; Jeff. Med. Coll., 1906	1906	1906
Coffey, James C., Salisbury; Emory Univ., 1937	1937	1940
Coleman, L. A., Salisbury; Univ. of Ala., 1912	1927	1935
Eagle, J. C., Spencer; Jeff. Med. Coll., 1923; U.N.C.; Wake Forest, 1921	1923	1925
Flemming, Giles M., Cleveland; Emory Univ., 1918	1919	1921
Frazier, J. W., Salisbury; Jefferson Med. Coll., 1924	1924	1927
Glover, F. O., Salisbury; Univ. of Pa., 1928	1931	1932
Harding, S. A., Mocksville; N. C. Med. Coll., 1910	1910	1913
Ketchie, J. M., Salisbury; Jefferson Med. Coll., 1922	1922	1925
Long, Wm. Matthews, Mocksville; Tulane, 1933	1934	1934
Lowery, John R., Salisbury; Univ. of Md., 1904; U.N.C.	1904	1913
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919; U.N.C.	1919	1922
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916; U. N. C.	1916	1920
Mock, C. Glenn, Salisbury; Univ. of Pa., 1935	1935	1938
Monk, Henry L., Salisbury (Hon.); Med. Coll. of Va., 1899; U.N.C.	1899	1903
Newman, H. H., Salisbury; Johns Hopkins, 1913	1914	1916
Oliver, J. A., Rockwell; Coll. of Med. Evangelists, 1939	1935	1937
Peeler, John H., Salisbury (Hon.); Univ. Coll. of Med., 1899	1899	1904
Robertson, L. H., Salisbury; Univ. of Pa., 1929; U. N. C.	1929	1931
Seay, T. W., Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer (Hon.); Univ. Coll. of Med., 1909	1909	1910
Slate, Wesley C., Spencer (Hon.); Univ. of Tenn., 1903	1903	1904
Spencer, Frederick B., Salisbury (Hon.); Univ. of N. C., 1909	1909	1911
Whicker, Max E., China Grove; Univ. of Md., 1932	1932	1934
Woodson, Charles W., Salisbury (Hon.); Columbia Univ., Coll. of P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: Washburn, B. E., Rutherfordton; Univ. of Va., 1911	1912	1917
Secretary: Glenn, C. F., Rutherfordton; Univ. of Louisville, Ky., 1914	1927	1928
Biggs, Montgomery H., Rutherfordton (Hon.); Univ. of Pa., 1897	1907	1908

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Bland, Charles A., Forest City; Med. Coll. of Va., 1935.....	1937	1938
Bostic, W. C., Jr., Forest City; Univ. of Pa., 1926; Wake Forest, 1924	1926	1927
Bostic, W. C., Forest City (Hon.); N. C. Med. Coll., 1905; Chattanooga Med. Coll., 1899	1905	1905
Crawford, Robert H., Rutherfordton; Johns Hopkins, 1914.....	1920	1921
Eaves, Rupert S., Rutherfordton; Med. Coll. of Va., 1932	1932	1933
Elliott, Wm. M., Forest City; Univ. of Ga., 1934.....	1934	1935
Gold, Charles F. (Hon.), Rutherfordton; Univ. of N. C., 1910.....	1910	1911
Harrill, L. B., Caroleen (Hon.); Chattanooga Med. Coll., 1897.....	1902	1904
Head, W. T., Campobello, S. C.; Atlanta Coll. of P. & S., 1911.....	1911	1923
Hudgins, H. A., Rutherfordton; Emory, 1936	1936	1939
Hunt, J. F., (Hon.), Spindale; Univ. of Tenn., 1900.....	1900	1912
Logan, F. W. H., Rutherfordton; N. C. Med. Coll., 1916.....	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917.....	1920	1920
Mitchell, L. P., Spindale; Wash. Univ., 1938.....	1940	1941
Moss, G. O., Cliffside; Emory Univ., 1927; Wake Forest, 1925.....	1927	1929
Rucker, Adin Adam, Rutherfordton (Hon.); Univ. of Md., 1908.....	1908	1909
Verner, Carl Hugh, Forest City; P. & S. Atlanta, 1912.....	1923	1927
Wilkinson, Louis L., Rutherfordton; Univ. of Va., 1926.....	1941	1941
Wiseman, P. H., Avondale; Med. Coll. of Va., 1925.....	1925	1926

SAMPSON COUNTY SOCIETY

President: Starling, W. P. Roseboro; Med. Coll. of Va., 1933	1933	1936
Secretary: Best, G. E., Clinton; Temple Univ., 1938.....	1938	1940
Ayers, J. S., Clinton; Jeff. Med. Coll., 1932.....	1932	1937
Brewer, J. Street, Roseboro; Jeff. Med. Coll., 1919; Wake Forest, 1917	1919	1921
Cox, S. C., Kerr; Med. Coll. of Va., 1935.....	1935	1937
Crumpler, Paul, Clinton (Hon.); Univ. of Tenn., 1907.....	1907	1908
Johnson, A. N., Garland; Univ. of Pa., 1933; U.N.C.....	1933	1935
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916.....	1920	1923
Matthews, James O., Clinton (Hon.); Univ. Coll. of Med., 1897.....	1897	1902
Nelson, W. H., Clinton; Temple Univ., 1934.....	1934	1936
Parker, Oscar L., Clinton; Med. Coll. of Va., 1918.....	1918	1919
Royal, D. M., Salemburg; Med. Coll. of Va., 1926; Wake Forest, 1924	1926	1928
Sessoms, E. T., Roseboro; N. C. Med. Coll., 1915.....	1915	1917
Sikes, Gibson L., Salemburg (Hon.); Univ. Coll. of Med., 1900.....	1900	1902
Small, Victor R., Clinton; Ohio State Univ., 1916.....	1920	1921
Williams, Jabez H., Clinton; Jefferson Med. Coll., 1920.....	1920	1922

SCOTLAND COUNTY SOCIETY

President: Wilkes, Marcus B., Laurinburg; N. C. Med. Coll., 1912.....	1923	1923
Secretary: Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912.....	1912	1913
Buchanan, L. T., Laurinburg; Jeff. Med. Coll., 1913; Wake Forest, 1911	1913	1918
James, Albert W., Laurinburg; Jeff. Med. Coll., 1918.....	1918	1921
James, F. P., Laurinburg; Univ. of Pa., 1916; U.N.C.....	1916	1917
John, Peter, Laurinburg (Hon.); Univ. of Md., 1897; U.N.C.....	1897	1904
Livingston, Everett Alex, Gibson; Univ. of Md., 1912.....	1912	1913
Pate, James G., Gibson; Univ. of Pa., 1916; U.N.C.....	1916	1918
Reed, D. H. (Hon.), Wagram; George Washington Univ., 1901.....	1904	1906
Summerlin, Harry, Laurinburg; S. C. Med. Coll., 1933.....	1933	1935

STANLY COUNTY SOCIETY

President: McLeod, W. L., Norwood; Temple Univ., 1938.....	1938	1940
Secretary: Outlaw, J. K., Albemarle; Syracuse Univ., 1923.....	1926	1934
Allen, Jos. A., New London (Hon.); Univ. Coll. of Med., 1901.....	1901	1904
Bigler, V. L., Albemarle; Univ. of Pittsburg, 1925.....	1926	1927
Brunson, E. P., Albemarle; Jefferson Med. Coll., 1921.....	1922	1934
Dickson, M. S., Oakboro; Med. Coll. of S. C., 1927.....	1927	1929
Dunlap, Lucius Victor, Albemarle (Hon.); Univ. of N. C., 1908.....	1909	1910
Gaskin, J. S., Albemarle; Med. Coll. of S.C., 1925.....	1929	1931
Gaskin, Lewis R., Albemarle; Med. Coll. of S. C., 1921.....	1924	1926
Gaskin, Madge B., Albemarle; Med. Coll. of S. C., 1926.....	1933	1934
Hathcock, Thomas A., Norwood (Hon.); Univ. of Md., 1893; U.N.C.....	1893	1904
Hilborn, Caroline, Stanfield; Cleveland Homeopathic Med. Coll., 1913.....	1923	1939
Hilborn, R. R., Stanfield; American Med. Missionary Coll., 1904.....	1923	1939

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Hill, Wm. Isaac, Albemarle (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1897	1897	1904
Lapsley, A. F., Badin; Med. Coll. of Va., 1933	1936	1937
Laton, James F., Albemarle (Hon.); N. C. Med. Coll., 1904	1904	1910
McKenzie, Wayland N., Albemarle; Med. Coll. of Va., 1935	1935	1937
Moore, D. Bain, Badin; Univ. Coll. of Med., 1913	1913	1915
Shaver, W. T., Albemarle; Univ. of Md., 1918	1920	1921
Tally, B. T., Albemarle; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1922

STOKES—SEE FORSYTH-STOKES

SURRY-YADKIN COUNTIES SOCIETY

President: Brandon, H. A., Yadkinville; Syracuse Univ., 1935	1935	1940
Secretary: Reeves, G. F., East Bend; Med. Coll. of S. C., 1925	1925	1937
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Reale, Seth M., Elkin; Tulane Univ., 1935	1936	1938
Bell, S. A., Cycle; Northwestern Univ., 1934	1935	1938
Britt, T. C., Mt. Airy; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1925
Caldwell, Robert M., Mt. Airy; Univ. of Va., 1936	1938	1940
Derbyshire, R. C., Mt. Airy	1929	1942
Finney, J. R., Boonville; N. C. Med. Coll., 1910	1910	1911
Flippin, J. M., Pilot Mountain (Hon.); Coll. of P. & S., Balt., 1884	1893	1900
Flippin, Samuel T., Siloam (Hon.); N. C. Med. Coll., 1898	1898	1898
Franklin, R. B. C., Mt. Airy; Queens Univ., 1931	1938	1940
Haywood, C. L., Jr., Elkin; Harvard, 1927	1929	1930
Johnson, J. R., Elkin; Med. Coll. of Va., 1927; Wake Forest, 1925	1927	1929
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., Va., 1905	1909	1916
Royall, M. A., Elkin (Hon.); Coll. of P. & S., Balt., 1885	1889	1904
Salmons, H. C., Elkin (Hon.); N. C. Med. Coll., 1904	1904	1908
Smith, R. E., Mt. Airy; Univ. of Pa., 1923; U. N. C.	1923	1926
Sykes, Charlie L., Pilot Mountain; Georgetown, 1938	1938	1939

SWAIN COUNTY SOCIETY

Bacon, Harold Lyle, Bryson City; Northwestern Univ., 1934	1935	1936
Johnson, Edward J., Cherokee; Univ. of Iowa, 1930		1936
Weiters, John C., Bryson City; Med. Coll. of S. C., 1912	1933	1934

TRANSYLVANIA COUNTY SOCIETY

President: Cliff, B. F., Brevard; George Washington Univ., 1908	1909	1941
Secretary: Sader, Julius, Brevard; N. Y. Univ., 1928	1938	1939
English, Edwin S., Brevard; Univ. of the South, 1901	1902	1904
Lynch, Geo. B., Brevard; Univ. of Md., 1914	1920	1923
McLeod, Walter G., Rosman; Baylor Univ., 1921	1926	1927
Newland, Chas. L., Brevard; Med. Coll. of Va., 1927	1928	1932
Stokes, Robert L., Brevard; Univ. of Md., 1903	1922	1942
Wilkerson, J. B., Brevard; Memphis Hos. Med. Coll., 1906	1923	1924

TYRRELL—SEE MARTIN-WASHINGTON-TYRRELL

UNION COUNTY SOCIETY

President: Faulk, J. G., Monroe; Med. Coll. of Va., 1931	1931	1932
Secretary: Love, Wm. M., Monroe; N. C. Med. Coll., 1915	1915	1919
Andrews, F. N., Waxhaw; Med. Coll. of S. C., 1925	1941	1942
Blair, M. P., Marshville (Hon.); Med. Coll. of Va., 1895	1895	1895
Bolt, C. A., Marshville; Med. Coll. of S. C., 1926	1929	1930
Garren, R. H., Monroe (Hon.); Univ. of Nashville, 1900	1901	1904
Goudebeck, Jno. J., Monroe; Med. Coll. of S. C., 1923	1924	1924
Ham, Clem, Monroe; Med. Coll. of S. C., 1926	1929	1930
Hardin, Parker C., Monroe; Harvard Univ., 1927	1937	1937
McLeod, John Purl Utley, Marshville; Coll. of Med. Evangelists, 1939	1939	1940
Neal, John W., Monroe (Hon.); N. Y. Univ., 1884	1887	1904
Neese, K. E., Monroe; Washington Univ., 1929; U.N.C.	1929	1934
Ormand, J. W., Monroe; Univ. of Cincinnati, 1926; U.N.C.	1926	1928
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919
Williams, Edward J., Monroe; Univ. and Bellevue Hosp. Med. Coll., 1917	1920	1921

VANCE COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: White, C. H., Henderson; Tulane, 1928.....	1930	1935
Bass, H. Hartwell, Henderson; Univ. of Pa., 1928; U.N.C.....	1929	1930
Fenner, Edwin F., Henderson (Hon.); Univ. of Md., 1905.....	1906	1907
Furman, Wm. H., Henderson; Jefferson Med. Coll., 1910.....	1910	1913
Gregg, Alfred D., Henderson; Med. Coll. of S. C., 1913.....	1927	1928
Newcombe, A. P., Jr., Henderson; Jefferson Med. Coll., 1922.....	1922	1924
Newell, H. A., Henderson (Hon.); Coll. of P. & S., Balt., 1906.....	1906	1906
Noel, W. W., Henderson; Johns Hopkins, 1929.....	1939	1940
Rollins, C. D., Henderson; Univ. of Pa., 1935; U. N. C.....	1935	1939
Rollins, Vance B., Henderson; Univ. of Pa., 1932; U.N.C.....	1932	1936
Upchurch, R. T., Henderson; Jefferson, 1908.....	1908	1910
Wheeler, J. H., Henderson; Jeff. Med. Coll., 1918; U. N. C.....	1918	1920

WAKE COUNTY SOCIETY

President: Umphlet, Thomas L., Raleigh; Univ. of Pa., 1934.....	1934	1939
Secretary: McGee, Robert L., Raleigh; Univ. of Pa., 1932.....	1932	1935
Ashby, J. W., Raleigh; Univ. of Md., 1905.....	1921	1922
Bollus, Michael, Raleigh; Jeff. Med. School, 1934.....	1934	1938
Brian, Earl, Raleigh; Duke Univ., 1934.....	1936	1939
Broughton, A. C., Jr., Raleigh; Med. Coll. of Va., 1937.....	1937	1939
Buffaloe, J. S., Garner (Hon.); Balt. Med. Coll., 1900.....	1900	1904
Bugg, C. R., Raleigh; Johns Hopkins, 1922.....	1924	1926
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915.....	1915	1918
Campbell, Alton C., (Hon.), Raleigh; Univ. of N. C., 1910.....	1910	1912
Caveness, Zebulon M., Raleigh (Hon.); Univ. of N. C., 1903.....	1903	1903
Caviness, V. S., Raleigh; Jeff. Med. Coll., 1921; U.N.C.....	1921	1926
Coleman, G. S., (Hon.), Raleigh; Med. Coll. of Va., 1907.....	1907	1909
Combs, Jos. J., Raleigh; Columbia Univ., Coll. of P. & S., N. Y., 1926.....	1926	1929
Cooper, G. M., Raleigh (Hon.); Univ. Coll. of Med., 1905.....	1905	1904
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., 1914.....	1914	1917
Crumpler, A. G., Fuquay Springs; Temple Univ., 1936.....	1936	1938
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920; U.N.C.....	1920	1923
Dickinson, K. D., Raleigh; Univ. of Minn., 1932.....	1935	1936
Eldridge, Chas. P., Raleigh; Univ. of Pa., 1926; U.N.C.....	1926	1928
Fields, James A., Raleigh; Med. Coll. of Va., 1917.....	1941	1941
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915; U.N.C.....	1915	1917
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913; U.N.C.....	1915	1916
Fox, P. G., Raleigh; Med. Coll. of Va., 1922.....	1923	1929
Fox, Robert Eugene, Raleigh; Univ. of Pa., 1926.....	1926	1929
Freeman, R. H., Raleigh; Jefferson Med. Coll., 1908.....	1908	1919
Gibson, M. R., Raleigh (Hon.); Univ. of Md., 1905; U.N.C.....	1905	1906
Hall, Edgar M., Jr., Raleigh; Univ. of Pa., 1938.....	1938	1941
Hamilton, John H., Raleigh; Harvard Univ., 1916.....	1926	1926
Haywood, Hubert B., Raleigh (Hon.); Univ. of Pa., 1909.....	1909	1910
Herring, E. H., Raleigh; Univ. of Pa., 1930; Wake Forest.....	1930	1934
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918.....	1918	1922
Hill, Millard D., Raleigh; Med. Coll. of Va., 1928; Wake Forest.....	1928	1931
Hitch, Joseph M., Raleigh; Univ. of Va., 1933.....	1938	1939
Horton, M. C. (Hon.), Raleigh; Univ. Coll. of Med., Virginia, 1903.....	1911	1912
Horton, Wm. C., Raleigh (Hon.); Coll. of P. & S., Balt., 1897.....	1896	1904
Jones, Carey C., Apex; Jeff. Med. Coll., 1920; Wake Forest, 1918.....	1920	1923
Judd, Eugene C., (Hon.), Raleigh; Univ. of Pa., 1911; U.N.C.....	1911	1912
Judd, Glenn B., Varina; Vanderbilt Univ., 1932; Duke Univ.....	1934	1935
Judd, James M., Varina (Hon.); Balt. Med. Coll., 1897.....	1897	1901
Kitchin, Thurman D., Wake Forest (Hon.); Jeff. Med. Coll., 1908; U. N. C.....	1908	1908
Knox, J. C., Raleigh; Univ. of Md., 1924.....	1924	1932
Lane, Bessie E., Raleigh; Woman's Med. Coll. of Pa., 1921.....	1921	1926
Lawrence, Ben J., Raleigh; Jeff. Med. Coll., 1918; U.N.C.....	1918	1920
Liles, L. C., Raleigh; Med. Coll. of Va., 1930; U.N.C.....	1930	1933
McLeod, N. H., Raleigh; Univ. of Pa., 1930; U.N.C.....	1930	1932
McMannus, Hugh F., Raleigh; Med. Coll. of S. C., 1938.....	1938	1941
Mitchener, J. S., Raleigh; Johns Hopkins, 1915.....	1915	1917
Neal, Kemp P., Raleigh; Harvard Univ., 1917.....	1920	1921
Neal, Paul N., Raleigh; Harvard Univ., 1919.....	1920	1921
Noble, R. P., Raleigh (Hon.); Univ. of N. C., 1907.....	1907	1908
Oliver, A. S., Raleigh; Jeff. Med. Coll., 1914; U.N.C.....	1914	1919
Owen, J. F., Raleigh; Jeff. Med. Coll., 1920; Wake Forest, 1918.....	1920	1927
Peasley, E. D., Raleigh; Univ. of Iowa, 1927.....	1939	1940

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Peters, David B., Raleigh; George Washington Univ., 1917.....	1920	1941
Powers, Frank P., Raleigh; Univ. of Pa., 1927; Wake Forest, 1923.....	1927	1928
Procter, I. M., Raleigh; Univ. of Pa., 1915.....	1915	1917
Rand, E. G., Raleigh; Univ. of Pa., 1926; U.N.C.....	1926	1929
Ray, O. L., Raleigh (Hon.); Univ. Coll. of Med., 1899.....	1899	1904
Reynolds, C. V., Raleigh (Hon.); Univ. of N. Y., 1895.....	1895	1896
Rhodes, John S., Raleigh; Harvard Univ., 1929; U.N.C.....	1929	1936
Richie, Richard F., Raleigh; Univ. of Buffalo, 1927.....	1939	1940
Root, Aldert S., Raleigh; Univ. of Pa., 1911.....	1911	1913
Royster, C. L., Raleigh; Cornell, 1935.....	1935	1941
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894.....	1894	1895
Ruark, R. J., Raleigh; Univ. of Pa., 1931.....	1931	1934
Sinclair, L. G., Raleigh; Univ. of Pa., 1933.....	1933	1939
Smith, Sidney, Raleigh; Tulane Univ., 1925.....	1925	1930
Stimpson, R. T., Raleigh; Univ. of Pa., 1927; U.N.C.....	1927	1930
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914.....	1914	1917
Thompson, Wm. Nelson, Raleigh; Univ. School of Med., 1939.....		1940
Turner, H. G., Raleigh; Univ. of Pa., 1906; U.N.C.....	1907	1910
Wall, Roger I., Raleigh; Tulane, 1934.....	1934	1937
Ward, W. C., Raleigh; Univ. of Louisville; Wake Forest, 1929.....	1931	1934
Ward, W. T., Raleigh; Univ. of Md., 1925.....	1925	1927
Watson, James, Raleigh; Northwestern Univ., 1924.....	1940	1941
Weathers, R. R., Knightdale; Med. Coll. of Va., 1926; Wake Forest, 1924.....	1926	1928
Webb, Alexander, Jr., Raleigh; Harvard, 1937.....	1940	1941
West, Louis N., Raleigh; Jeff. Med. Coll., 1912; U.N.C.....	1912	1915
Wilkerson, Annie Louise, Raleigh; Med. Coll. of Va., 1938.....	1938	1939
Wilkerson, Charles B., Raleigh (Hon.); Univ. of N. C., 1906.....	1906	1908
Wilkinson, R. W., Jr., Wake Forest; Tulane, 1922; Wake Forest, 1920.....	1923	1924
Williams, Chas. F., Raleigh; Jeff. Med. Coll., 1934.....	1934	1937
Wilson, Frank, Jr., Raleigh; Univ. of Md., 1932; U.N.C.....	1932	1937
Wright, J. B., Raleigh (Hon.); Univ. Coll. of Med., 1899; U.N.C.....	1899	1900
Wright, Jas. R., Raleigh; Univ. of Md., 1940.....	1940	1940
Yarborough, Frank R., Cary; Univ. of Pa., 1923; U. N. C.....	1925	1926

WARREN COUNTY SOCIETY

President: Hunter, F. P., Warrenton; Univ. of Va., 1925.....	1925	1927
Secretary: Foster, H. H., Norlina; Jeff. Med. Coll., 1919.....	1919	1923
Peete, C. H. (Hon.), Warrenton; Univ. of Pa., 1903.....	1906	1906

WASHINGTON—SEE MARTIN-WASHINGTON-TYRRELL

WATAUGA-ASHE COUNTIES SOCIETY

Bunch, Charles Pardue, Sturgills; Duke Univ., 1939.....	1941	1942
Hagaman, J. B., Boone; Univ. of Tenn., 1915.....	1915	1917
Harmon, R. H., Boone; Med. Coll. of Va., 1936.....	1936	1936
Jones, Arthur Lee, Lansing; Univ. Coll. of Med., 1901.....	1901	1941
Jones, D. C., Lansing; Univ. of Pa., 1927.....	1930	1930
King, Robert Rogers, Boone; Univ. of Ark., 1906.....	1931	1932
Perry, H. B., Boone; N. C. Med. Coll., 1905.....	1905	1922

WAYNE COUNTY SOCIETY

President: Strosnider, Charles F., Goldsboro; Univ. of Md., 1909.....	1910	1913
Secretary: Woodard, A. G. (Hon.), Goldsboro; Univ. of N. C., 1907.....	1907	1909
Benton, George R., Goldsboro; Univ. of Pa., 1934.....	1935	1938
Best, D. E., Goldsboro; Univ. of Md., 1924; Wake Forest, 1922.....	1924	1926
Bizzell, M. E., Goldsboro; Tulane, 1923; U.N.C.....	1923	1925
Bizzell, T. M., Goldsboro; Univ. of Md., 1908.....	1908	1912
Brown, C. R., Goldsboro; S. C. Med. Coll., 1934.....	1934	1937
Clark, Milton S., Goldsboro; Emory Univ., 1937.....	1937	1939
Cobb, Donnell B., Goldsboro; Univ. of Pa., 1921; U.N.C.....	1921	1926
Cobb, Wm. H., Goldsboro (Hon.); Jeff. Med. Coll., 1889.....	1889	1890
Dale, G. C., Goldsboro; Univ. of Pa., 1925; U.N.C.....	1925	1927
Harrell, L. J., Goldsboro; Univ. of Md., 1930; Wake Forest.....	1930	1934
Henderson, C. C., Mt. Olive; Univ. of Md., 1914; U.N.C.....	1914	1919
Howard, C. E., Goldsboro; Univ. of Pa., 1925; U.N.C.....	1925	1927
Irwin, Henderson, Eureka; Univ. of Md., 1912.....	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., 1911; Wake Forest, 1909.....	1911	1917

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Long, I. C., Goldsboro; Univ. of Md., 1923.....	1923	1937
McCuiston, A. M., Mt. Olive; N. C. Med. Coll., 1911.....	1911	1917
McPheeters, S. B., Goldsboro; Washington Univ., 1906.....	1933	1934
Miller, Robert B., Goldsboro (Hon.); Med. Coll. of Va., 1898; U.N.C.....	1900	1902
Pate, A. H., Goldsboro; Duke Univ., 1937.....	1939	1941
Person, Edgar Cooper; Pikeville (Hon.); Med. Coll. of Va., 1905.....	1905	1908
Rand, C. H., Fremont; Univ. of Pa., 1926; U.N.C.....	1926	1928
Rose, David J., Goldsboro; Tulane, 1922.....	1922	1924
Rose, James W., Pikeville; Tulane, 1928.....	1928	1931
Smith, W. C., Goldsboro; Univ. of Md., 1936.....	1936	1938
Smith, Wm. H., (Hon.), Goldsboro; Univ. of Pa., 1906; U.N.C.....	1907	1912
Stenhouse, Henry M., Goldsboro; Univ. of Colo., 1913.....	1937	1938
Sutton, Wm. G., Seven Springs (Hon.); Jeff. Med. Coll., 1889.....	1889	1904
Tart, Baston I., Jr., Goldsboro; Temple Univ., 1938.....		1942
Thacker, E. A., Goldsboro; Univ. of Illinois, 1933.....	1941	1942
Warrick, L. A., Goldsboro; George Washington Univ., 1923.....	1923	1924
Whelpley, Frank L., Goldsboro; Missouri Univ., 1902.....	1918	1919
Willis, W. H., Goldsboro.....		1942
Zealy, A. H., Jr., Goldsboro; Harvard Univ., 1930.....	1932	1934

WILKES-ALLEGHANY COUNTIES SOCIETY

President: Hubbard, Fred C., North Wilkesboro; Jefferson Med. Coll., 1918.....	1919	1924
Secretary: Mitchell, G. T., Wilkesboro; Jefferson Med. Coll., 1927....	1927	1928
Bentley, J. Gordon, Pores Knob; Univ. of Louisville, 1911.....	1938	1939
Bumgarner, John, North Wilkesboro.....		1940
Bundy, William, North Wilkesboro; Vanderbilt Univ., 1936.....	1936	1940
Eller, Albert J., Wilkesboro (Hon.); Coll. of P. & S., Balt., 1893.....	1895	1904
Gilreath, Frank H., N. Wilkesboro (Hon.); Univ. of Nashville, 1898....	1898	1898
Hutchens, E. M., N. Wilkesboro (Hon.); N. C. Med. Coll., 1896.....	1896	1904
McNeill, James H., N. Wilkesboro; Geo. Washington Univ., 1926.....	1926	1927
Miles, Walter W., Champion; Univ. of Tenn., 1931.....	1933	1934
Morris, John W., North Wilkesboro; Univ. of Va., 1936.....	1938	1938
Newton, Wm. K., North Wilkesboro; Med. Coll. of Va., 1931.....	1932	1933
Phillips, E. N., North Wilkesboro; Med. Coll. of Va., 1930.....	1930	1935
Sink, C. S., N. Wilkesboro; N. C. Med. Coll., 1912.....	1912	1913
Smith, Harold Benjamin, N. Wilkesboro; Med. Coll. of S. C., 1929.....	1929	1930
Thompson, C. A., Sparta; Med. Coll. of Va., 1924; Wake Forest, 1922	1924	1936
Triplett, W. R., Purlear; N. C. Med. Coll., 1914.....	1915	1920

WILSON COUNTY SOCIETY

President: Clark, Badie T., Wilson; Univ. of Ga., 1930.....	1934	1935
Secretary: Strickland, Arthur T., Wilson; Washington Univ., 1932.....	1932	1935
Anderson, Wade H., Wilson (Hon.); Univ. of Va., 1902.....	1904	1904
Bell, G. E., Wilson; Jeff. Med. Coll., 1921; Wake Forest.....	1921	1922
Best, Henry B., Wilson (Hon.); Univ. of N. C., 1907.....	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914.....	1923	1924
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909.....	1924	1924
Darden, D. B., Stantonsburg; Univ. of Pa., 1921; U. N. C.....	1924	1926
Dickinson, Elijah T., Wilson (Hon.); Med. Coll. of Va., 1895.....	1895	1900
Fike, Ralph L., Wilson; Med. Coll. of S. C., 1932.....	1933	1934
Goodwin, Cleon W., Wilson; Univ. of Pa., 1934.....	1934	1940
Herring, Tilghman, Wilson; Johns Hopkins, 1938.....	1938	1941
Hunter, W. C., Wilson; Univ. of Pa., 1928; U.N.C.....	1928	1931
Kerr, Joseph T., Wilson; Jefferson Med. Coll., 1935.....	1935	1940
McClees, E. C., Elm City; Med. Coll. of Va., 1917.....	1920	1920
Mitchell, Geo. W., Wilson; Univ. Coll. of Med., 1913.....	1913	1914
Pittman, M. A., Wilson; Jeff. Med. Coll., 1921; Wake Forest, 1919.....	1924	1923
Putney, R. H., Elm City; Med. Coll. of Va., 1914.....	1914	1920
Saliba, Michael M., Wilson (Hon.); Balt. Med. Coll., 1897.....	1910	1910
Simons, C. E., Wilson; Med. Coll. of Va., 1930; U. N. C.....	1930	1935
Sloan, Wm. S., Wilson; Vanderbilt Univ., 1933.....	1933	1935
Smith, A. Jones, Black Creek; Univ. of Pa., 1921; U.N.C.....	1921	1923
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916.....	1916	1917
Tillery, J. G., Wilson; Med. Coll. of Va., 1938.....	1938	1941
Williams, Albert F., Wilson (Hon.); Univ. of Md., 1901; U.N.C.....	1901	1904
Willis, H. C., Wilson; P. & S., Memphis, 1911.....	1916	1924
Woodard, C. A., Wilson (Hon.); Univ. of Va., 1904.....	1904	1909

YADKIN—SEE SURRY-YADKIN

YANCEY—SEE MITCHELL-YANCEY

BOOK REVIEWS—Continued

(FROM PAGE 106)

Management of the Sick Infant and Child. By Langley Porter, B.S., M.D., M.R.C.S. (Eng.), L.R.C.P. (Lond.), Dean Emeritus, University of California Medical School and Professor of Medicine; Formerly Professor of Clinical Pediatrics, University of California Medical School; and William E. Carter, M.D., Director of University of California Hospital, Out-Patient Department; Formerly Chief of Children's Clinic, University of California Hospital. Sixth revised edition. 975 pages, 96 illustrations. Price, \$11.50. St. Louis: C. V. Mosby Company, 1942.

This new edition of Porter's and Carter's book continues to carry out their aim of providing a textbook for the particular use of the general practitioner of medicine. In following this aim, the authors have divided the book into three sections. The first section takes up the problems of diagnosis of the common symptoms of infancy. The second deals with specific diseases from the systemic standpoint. In both of these sections there are numerous references to therapy. However, an entirely separate section on treatment takes up the last third of the book.

The emphasis throughout the book is on the management of children and the specific therapy of the diseases one may encounter in taking care of infants and children. The last section is particularly valuable in that the authors have outlined the methods of treatment very carefully and have included many very valuable photographs, illustrating their technique. Also in this section there are found directions for making up various types of infant feedings, and numerous charts are included, showing the vitamin contents of various foods in such terms that one can judge the vitamin intake of a usual diet. There are listed in this section a number of prescriptions for use in specific diseases, all of which seem to be notable on account of their simplicity.

In general, this seems to be a fine addition to our pediatric texts and should be particularly valuable for the man who wants an emphasis on symptomatic diagnosis and therapy. If the reviewer were to offer any criticism, it would be that the multiplicity of treatments suggested and the frequency with which drug therapy is instituted leave one slightly confused. It is the opinion of the reviewer that much of the drug therapy in children can be eliminated quite profitably. However, this statement does not mean to detract from the value of the book, for the individual physician may decide for himself about the necessity for drug therapy.

Cancer of the Spine.—Cancer of the spine may be primary, or secondary from metastasis. The more common primary lesions are sarcoma, Ewing's tumor, and myeloma. Carcinoma, secondary to lesions in the breast, uterus, prostate, thyroid gland and lungs, should always be considered. Too often x-ray reveals carcinoma of the spine when there is an undiscovered cancer of another organ. I have seen such cases where the breast has never been examined, or where delay in the treatment of a breast lesion has been advised. It is only fair to say, however, that the primary lesion may be missed if it is very small or deep seated.—Frank R. Ober, M.D.: Lame Back, J. M. Soc. State of New Jersey, 37:504 (October) 1940.

Psychotherapy in Medical Practice. By Maurice Levine, M.D., Attending Psychiatrist, Cincinnati General Hospital, and Assistant Professor of Psychiatry, University of Cincinnati. 320 pages. Price, \$3.50. New York: The Macmillan Co., 1942.

The author has succeeded in presenting in this relatively short volume a non-technical handbook of psychotherapy which should prove valuable to the general practitioner, to the medical specialist in fields other than psychiatry, and to the medical student. The need of these groups for an understanding of the methods of treating mild and minor cases of psychic disturbance is evident. Indeed, it is the internist and surgeon rather than the psychiatrist who first encounter early cases of psychiatric disorder. In treating such individuals by relatively easy methods of psychotherapy instead of subjecting them to medicinal and surgical procedures (as is unfortunately too often done), the general practitioner and surgeon could make the greatest contribution to the mental hygiene and welfare of the patient.

Dr. Levine has written this book in a clear and practical manner. There is none of the complexity of the usual psychiatric text. The author begins by pointing out twenty-four common misconceptions, including the view that bromides are always mild and safe, and that heredity is the chief cause of psychiatric disorders. He then proceeds to explain the methods of psychotherapy, indicating those which are applicable by the general practitioner and those to be reserved for the specialist. The remaining chapters deal with suicide risks, the study of psychogenic factors, sex and marriage, problems of parents and children, and other pertinent topics.

Who Represents ME? I am Mr. Average Man, who has heard amused and sometimes scornful references to that individual who "writes a letter to the Times." I, also, have at times wanted to compose burning epistles on subjects which have moved me deeply. Unfortunately, these Pegler-like scorches rarely go beyond the "I think I will" stage, and they have not been set down on paper, addressed and mailed. During the Supreme Court fight one of these mental dream letters actually materialized, and now, four fumbling months after Pearl Harbor, another is crystallizing.

I want to know why we have a rubber shortage when such a small per cent of all the money spent by the government in the last ten years could have built up a tremendous raw rubber reserve. Why does the Administration favor the "closed shop," which is unAmerican? Why were war supplies being sent to Japan until just a few months ago? If during the current year I pay four and one-half times the income tax I paid last year, is it improper for me to ask why labor union funds are unaccounted for and untaxed?

The public utilities have a lobby. So do the C.I.O. and the A.F. of L. So do the manufacturers, and "Capital". There is a strong agricultural bloc—in fact almost everyone in Washington, including senators and congressmen, are "identified with" this or that or another "bloc". So what chance have I, Mr. Average Man, in these pressure group activities?

I am going to write a letter! But to whom shall I address my petition? Who represents me?—O. S. Philpott, Rocky Mountain M. J. 39:261 (April) 1942.

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THE SEX HORMONES IN OBSTETRICS AND GYNECOLOGY

ARTHUR GROLLMAN, M.D., Ph.D.
WINSTON-SALEM

I have been requested by your chairman to outline the present status of endocrine therapy in obstetrics and gynecology, with particular reference to the use of the sex hormones. Notable advances in this field of endocrinology have been made during the last two decades. Many aspects of the subject have been elucidated and our general knowledge of the biology of sex has been greatly advanced⁽¹⁾. The chemist also has kept pace with these developments and has made available by synthesis many of the sex hormones. The practical application of these substances clinically has, on the other hand, failed to fulfill the enthusiastic expectations of earlier workers in this field.

The sex hormones have been advocated for use in practically every condition encountered by the gynecologist and obstetrician. The claims advanced as to their effectiveness have, however, not always been supported by experience. Many of the conditions for which the sex hormones have been advocated—for example, menorrhagia, amenorrhea, and abortion—represent symptoms due to a variety of causes rather than gynecological entities. It is hardly to be expected, therefore, that one should be able to designate a specific hormone for the treatment of these conditions, as has so often been done; for it is rarely possible to reduce these disorders to a simple endocrine basis. For example, a given menstrual disorder may be due to a

deficiency or to an overproduction of estrogen, or of progesterone, or of both; to some imbalance between the two; to an inherent defect of the endometrium; to a disorder of glands (pituitary, adrenal, thyroid) upon the integrity of which the ovary is dependent; or to metabolic, nutritional, or toxic disorders. To advocate the use of a given hormone or combination of hormones for symptoms which may originate from such diverse causes is unjustified⁽¹⁾.

The Sex Hormones

The sex hormones available for clinical use comprise four classes of substances:

1. The estrogens, which include the various preparations of estrone, estriol (and its glycuronate), estradiol (also marketed in the form of its benzoic and propionic acid esters), and the synthetic compound diethylstilbestrol.

2. The progestational hormone, progesterone, and its anhydrohydroxy derivative, which is effective when administered orally.

3. The gonadotropins derived from pregnancy urine, from the serum of pregnant mares, or from the pituitary gland.

4. The male sex hormone, testosterone (marketed in the form of its propionic acid ester) and its methyl derivative, which is effective when administered orally.

We may now consider each of these groups of substances in the order in which they have just been enumerated.

Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Charlotte, May 13, 1942.

From the Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

1. Grollman, A.: *Essentials of Endocrinology*, Philadelphia, J. B. Lippincott Co., 1941.

The Estrogens

The uses and limitations of the estrogens in gynecological practice have recently been summarized by Hamblen⁽²⁾. These substances find their chief use in the treatment of the menopausal syndrome. Their effectiveness in this condition is generally accepted. It is, however, necessary to differentiate symptoms which occur at the climacteric but which do not have an endocrinological basis. The latter frequently respond to simpler forms of therapy and do not require the use of an estrogen.

The second principal use of the estrogens depends upon their capacity to stimulate the growth of the genital tract. This is the basis for their use in senile vaginitis, kraurosis vulvae and similar conditions, as well as for their use in juvenile gonorrheal vaginitis. Sulfathiazole, which acts directly against the gonococcus, has displaced the estrogens as the method of choice in treating the last-named condition.

An important aid in the rational application of the estrogens clinically has been the use of the vaginal smear. This procedure permits one to evaluate objectively the state of the organism, insofar as any estrogen deficiency is concerned, and serves as an indicator of the efficacy of treatment⁽³⁾.

The chief drawbacks to the effective use of the estrogens have been their excessive cost and the necessity of parenteral administration. The cost of the effective oral dose of the naturally occurring estrogens has been beyond the reach of most patients. This obstacle to the use of the estrogens has been removed by the introduction of the relatively simple and cheap synthetic compound, diethylstilbestrol. Although this compound differs essentially from the naturally occurring estrogens in chemical structure, it is probable that it is converted to estradiol in the organism. Per unit of weight, it is as effective as the natural compounds and pharmacologically has essentially the same actions as do the latter.

The undesirable side-reactions (nausea, vomiting, and epigastric pain) which follow the use of diethylstilbestrol and have discouraged its general use are to be attributed

to the excessive doses used by earlier workers. The toxic effects of diethylstilbestrol are similar to those observed when comparable amounts of the natural estrogens are administered. With moderate doses (1 mg. or less daily), given intermittently, unpleasant reactions are infrequent⁽⁴⁾.

An objection frequently raised against the use of the estrogens is their carcinogenic potentiality. In the doses used clinically there appears to be little danger of this complication. The growth of the epithelial, glandular and stromal elements of the reproductive tract which follows the administration of excessive doses does not show the abnormal proliferation characteristic of neoplastic growth⁽⁵⁾.

The Progestational Hormone

The use of the progestational hormone (progesterone) and its orally effective derivative (anhydrohydroxy progesterone) is based on much less secure data than is that of the estrogens. Theoretically, this hormone should be of value as a substitute for the corpus luteum, but evidence for the failure of the latter is in most cases indirect. Judging from the requirements for progesterone in the ovariectomized rabbit, much larger doses than are usually advocated would be required to elicit a response in the human female.

The Gonadotropins

Two types of gonadotropic substances are available for clinical use: (1) Chorionic gonadotropin prepared from human pregnancy urine or from pregnant mare's serum; (2) gonadotropic extract derived from the pituitary. As a result of the demonstrated synergism of these two types of gonadotropins, a mixture of the two has also been marketed recently.

Although the gonadotropins exert very striking effects when used in some of the lower mammals, their value in the human being is questionable. It must be emphasized that the gonadotropins differ markedly in their effects on the ovaries of different species and, hence, observations on the experimental animals cannot always be applied to man.

2. Hamblen, E. C.: Uses and Limitations of Estrogens in Gynecic Practice, J.A.M.A., 117:2205-2207 (Dec. 27) 1941.
3. Greenblatt, R. B.: The Vaginal Smear as a Guide to Estrogenic Therapy, J.M.A. Georgia 30:297-303 (July) 1941.

4. MacBryde, C. M.; Castrodale, D.; Loeffel, E.; and Freedman, H.: The Synthetic Estrogen Diethylstilbestrol, J.A.M.A., 117:1240-1242 (Oct. 11) 1941.
5. Geist, S. H. and Salmon, U. J.: Are Estrogens Carcinogenic in the Human Female? Am. J. Obst. & Gyn. 41:29-36 (Jan.) 1941.

Recent studies have failed to confirm the earlier claims that any of the available gonadotropins (or their combination) would induce follicle stimulation, maturation, or ovulation in the human being. Their use for this purpose is thus still in an experimental stage of development⁽⁶⁾.

The Male Sex Hormone

The mammalian organism is potentially hermaphroditic and normally both sexes elaborate male as well as female sex hormones. These two hormones are antagonistic, and hence it is possible to suppress effects induced by the female sex hormone by the administration of an excess of the male hormone. This fact has suggested the use of testosterone and its derivatives for a variety of gynecological conditions—for example, functional menometrorrhagia, functional dysmenorrhea, premenstrual mastopathies, and postpartum engorgement of the breasts⁽⁷⁾.

The chief drawback to the use of the androgens in gynecology is the fact that in the doses required to produce the desired effects, symptoms of masculinization (acne, hypertrichosis, deepening of the voice) may be induced. They must therefore be used with caution and in moderate doses only.

Conclusion

In spite of the drawbacks to the use of the sex hormones and their ineffectiveness in many conditions for which they have been suggested, there remain certain specific instances in which they are invaluable. Recent studies have defined the conditions for their rational application. Their promiscuous use without due regard to the underlying pathology and mechanism of their action is, however, to be deprecated.

Abstract of Discussion

A Member: Have you or anyone else noticed some sort of pulmonary effect—shortness of breath, pain in the chest, and various other vague symptoms through the chest region, particularly around the heart, but not connected with the heart itself—from an overdose or perhaps just continued small doses of stilbestrol?

A Member: I would like to ask what one observes in the vaginal smear mentioned by Dr. Grollman.

Dr. James B. Lounsbury (Wilmington): I would like to commend Dr. Grollman for his presentation

6. Geist, S. H.; Gaines, J. A.; and Salmon, U. J.: *The Effect of Gonadotropins Upon the Human Ovary*. Am. J. Obst. & Gyn. 42:619-637 (Oct.) 1941.

7. Geist, S. H. and Salmon, U. J.: *Androgen Therapy in Gynecology*, J.A.M.A. 117:2207-2213 (Dec. 27) 1941.

of this subject. I think that the paper of McBryde referred to, while it shows that the usual doses of stilbestrol used do not produce toxic damage, does give us some inkling as to the nature of the conservatism we ought to practice in the use of these really unknown products. For a long time it has been a habit of doctors to give stilbestrol in large doses for anything, without realizing what future damage may be done.

Dr. Grollman's remark about the application of laboratory findings to the human being is, I think, very important. We are trying to transpose findings made in experimental animals to the human being, and are being terrifically disappointed when we find these substances do not do in man what they do in animals.

Some time ago I did a little work along this line which indicates where the difficulty arises in the use of endocrine products in human beings. It has been well established that hormones induce estrus in rats and mice. What has not been emphasized, however, is the fact that the animals used are immature animals. I worked on the adult rat and mouse, and in only one out of twenty animals was an estrous cycle produced. All of the rest of the animals remained in diestrus. This finding is directly contradictory to the work that has been done for years, and shows simply that results on animals do not compare to those on the human being and consequently explains to some extent why the clinical effects have not always been as satisfactory as expected.

I would like to ask Dr. Grollman what the role of estriol is, now that we have stilbestrol? Personally I can't see the need for it except in very rare instances where there would be a toxic effect from the use of stilbestrol.

A Member: I would like for Dr. Grollman to tell us what is the best drug to use in healthy females who do not menstruate regularly, where we have amenorrhea, persisting sometimes from three to six months.

Dr. Grollman: The chest symptoms which have been observed to occur after stilbestrol and other estrogens are probably a part of the general effect of these substances on the cardiovascular system. The principal evidences of toxicity following the use of stilbestrol are nausea, vomiting and gastrointestinal symptoms. Vertigo, discomfort in the chest and more alarming symptoms may be elicited, but all of these usually follow the use of relatively large doses. In most conditions such excessive dosage is unnecessary and if one begins therapy with 0.1 mg. several times daily, it is usually found that less than 1 or 2 mg. daily suffices in most patients. When it is used in these doses, undesired symptoms are avoided.

There is no condition that I am aware of in which stilbestrol may not be used in place of the naturally occurring estrogens. Its effectiveness when administered orally renders parenteral administration unnecessary.

In applying the vaginal smear technique one notes the nature of the cells present. These reflect the state of the vaginal mucosa. Under the influence of estrogen, the vaginal smear shows only large, flat polygonal cells with small pyknotic nuclei. In the absence of estrogenic stimulation, the smear consists of small, round, deeply-stained cells with many leukocytes. Intermediate stages are found when the vaginal wall is only partially stimulated.

I agree with Dr. Lounsbury that the results of experiments on immature animals have been applied unjustifiably to the mature ovary. In addition to this, however, is the fact that the action of the gonadotropins on the ovary of the lower mammals (even

when mature) differs from that observed in the human being. Thus, although these substances may stimulate ovulation in the mature rabbit or ewe or in the immature rat, they fail to do so in the human female, and their use clinically for this purpose is unjustified.

Concerning the use of endocrines in amenorrhea, not being a gynecologist, I can take a nihilistic viewpoint regarding the advisability of therapy. When the estrogens were first introduced there was a tendency to try to simulate normally occurring activity in the reproductive tract. It is true that by administering the sex hormones one can produce bleeding, but one is not justified in calling this menstruation. It seems to me that from a theoretical standpoint it is undesirable to do this, since one really is not replacing the function of the organs nor is one approximating even closely the naturally occurring phenomenon or restoring a normal physiologic balance. It is quite unjustified to give merely the superficial appearance of normality by a little bleeding, since by this artificial method one is incidentally introducing other changes in the reproductive system.

A SUGGESTED PROGRAM FOR PREVENTIVE INOCULATIONS

FRANK HOWARD RICHARDSON, M. D.
BLACK MOUNTAIN

The American physician who deals with children finds himself in a paradoxical situation today. After patient research and hard-won experience, with a real passion to do something toward preventing diseases in children, he now finds himself possessed of specific procedures which would, if applied universally, wipe out six of the most serious childhood diseases within a generation. These are of course smallpox, whooping cough, diphtheria, tetanus, typhoid and tuberculosis¹.

Are these measures being applied to all children? You know the answer, and I believe you know the reason why they are not. It is that the physician in general practice, who sees far more children than the limited number of pediatricians can ever see, simply hasn't the time and energy and incentive to keep up with the advances and changes in procedure that are constantly appearing, both in current medical literature and in the directions that come with the biological products on which we depend for immunization.

I believe that when the pediatricians agree upon a simple, easily carried out program or schedule of preventive measures that can be put across without an unreasonable amount of effort, these diseases will be con-

trolled and perhaps eventually eliminated—but not unless this is done and until it is done.

It is solely with the hope of stimulating a discussion on the part of members of this section, and perhaps having a committee appointed to study the question of making some recommendations to the physicians of the state, that I recently sent letters to the Fellows of the American Academy of Pediatrics practising in this state. Judging their frailties by my own, I did not ask them what they were *doing* with their patients; I asked them what they were *trying* to do along preventive lines.

Some seventeen men have told me their procedure, in response to this questionnaire. I want to take this opportunity of thanking them. I shall not give you a table of figures and percentages, and my report will be just as informal as your replies were. Perhaps we may lay the groundwork for some simpler and more cooperative method of obtaining 100 per cent immunization in the course of this discussion.

Smallpox

Vaccination of the baby for smallpox was formerly considered a part of the obstetrical service of the family doctor. This was probably one big factor in reducing the incidence of smallpox to its present status, in which it is unknown by the majority of our patients today, and unfamiliar to most of us physicians. Because of this low incidence it is a little difficult to convince parents of the still-existing need for protection against smallpox, although the disease is not nearly so rare as the laity, and some of the medical profession, believe it to be. Another difficulty is the fact that this oldest of the protections still bears the odium of the superstitions of the past hundred and fifty years, when antivaccinationists made a cult of their opposition, and pre-antiseptic tragedies sometimes occurred.

The law compelling vaccination against smallpox before the beginning of school attendance has ensured protection of almost all children of school age, but it encourages parents to put off vaccination until the sixth year. All our experience teaches us that encephalitis never occurs in the first year of life, and that the subjective symptoms of discomfort are least in evidence during this period.

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

1. For details, see Toomey, John: Active Immunity, J.A.M.A. 119:1-25 (May 2) 1942.

None of the Fellows queried administers smallpox vaccination during the first few weeks of life. Ten of them (over one half) give it between the third and the fifth months; six of them (one third) around the end of the first year; one at 1½ and one at 2 years; and three before the child starts to school.

Whooping Cough

There is no natural immunity against whooping cough. Therefore it would seem that a child should be immunized against it early in life. Unfortunately it seems that the immunity conferred by very early injection is not as good as that resulting from later inoculation. So we find ourselves on the horns of a dilemma.

Dr. R. B. Lawson of the Bowman Gray School of Medicine suggests that we give the three preventive shots early; and then step up the protection thus gained by giving a subsequent injection every year for a few years. Alum precipitated whooping cough toxoid may be administered as early as the end of the first month.

So much for the problem. Here is how the Fellows who answered the questionnaire are meeting it. Most of them (fourteen, or four-fifths) give it during the first six months of life, "from three months on" being the earliest age stated; the remaining three Fellows give it during the second six months. None speak of stepping up the immunity by a subsequent inoculation.

No attempt was made to ascertain the preparation used, the amount given, the strength employed, or the number of doses or interval preferred. However, some mentioned using 10 thousand million organisms per cubic centimeter, some 20, and some 15; some give injections every week, some every ten days, some every two weeks, and some every three. The last interval, with 15 thousand million concentration, is the one now advocated by Sauer himself.

Diphtheria

Protection against diphtheria is obligatory by law in this state before the end of the first year. Davison (one of the Fellows, by the way, whose routine was contributed to this questionnaire), brings out the interesting point that if infants are inoculated with toxoid before they become Schick positive, active immunity is produced in only one-

third of them. Hence he says the infant should not be immunized until he is 9 months old.

All the Fellows queried give diphtheria protection during the second half of the first year, most of them specifying toxoid, but not mentioning whether or not they mean alum-precipitated toxoid.

The Schick test is given by most of the Fellows between three and six months after the completion of the diphtheria immunization; one gives it as soon as two months after. Only two reply that they do not do routine tests. Two give it annually, one of these specifying that he does this until the child is 10 or 12 years old; two give it every other year, one of these stating that he does it until the child is 8 years old. Two fellows give it at 3½ years; one gives it at 6.

Probably some of those who did not mention repeating the Schick test do so, in order to make sure of the child's continued protection. This point was brought home to one of the men, whose own son, away at college, greatly embarrassed him by sending word that the college doctor had found his throat culture positive and had had to give him antitoxin, in spite of a childhood immunization with toxin-anti-toxin in the days when a Schick test, once negative, was considered negative for life.

Tetanus

Tetanus is a disease against which Nature has provided us poor humans with no natural immunity. So terrible is it that perhaps the majority of surgeons and general practitioners insist that anyone with a severe wound, especially if it be a gunshot injury or a wound that could conceivably have been soiled with animal excreta in the form of street dust or barnyard or riding ring detritus, shall be given an injection of antitetanic serum, even though one half the people so "protected" suffer from the annoyances and dangers of serum sickness, and a number suffer from anaphylactic shock, which is sometimes fatal. And yet, as Calvin points out in Brenneman's *PEDIATRICS*², it is not the apparently serious wound that is complicated by tetanus; it is the trivial wound.

In such a situation as this, the use of a tetanus toxoid to produce active immunity comes as a godsend. The army has given

2. Calvin, in Brenneman, Joseph: *Practice of Pediatrics*, Hagerstown, Md., W. F. Prior, v. 2, p. 9.

the practice a wonderful endorsement in this war, just as it introduced the use of typhoid protection during World War I. The fact that tetanus toxoid can be combined with diphtheria toxoid in the same dose has led many pediatricians to take its use for granted when they give diphtheria protection. Hence they sometimes forget to explain to the parents of their little patients just what they are doing and the child may be given an unnecessary shot of antitetanic serum at some later date, when all he needs is an activating or "stepping up" third tiny dose of tetanus toxoid.

Combining diphtheria and tetanus toxoids seems to be the practice of all but one of the seventeen Fellows queried. This one gives in his reply, "not much tetanus." Only one gives it at a different time from the diphtheria protection—namely, in the second year.

If I were to write my letters again, I should ask what pains Fellows take to inform parents of exactly what this protection means. I am told that it is customary for these children to be given antitetanic serum with all its accompanying dangers and inconveniences rather than the simple, almost painless toxoid, especially if they are treated by a doctor other than the one who gave them their toxoid. Thus the active immunity is practically wasted, and the child is subjected to the conditions from which it was designed to spare him.

I am convinced that some sort of written or printed certificate should be given the parent of any child so protected, telling fully and exactly what has been done, and what protection is afforded. This should be a simple matter. Its neglect may cause serious consequences.

Typhoid Fever

Inoculations for typhoid fever (including paratyphoid A and B) were voluntary in our army until the beginning of World War I, when they became obligatory in all the armed forces. They were adopted enthusiastically in North Carolina at first, but later fell into disfavor and were largely neglected, as the incidence of the disease fell with better and more carefully guarded water and milk supplies. Of late this immunization has been taken up again, as evidenced by the returns sent in.

The enthusiasm manifested by the Fellows for this procedure, and the ages at which they suggest it vary. The ages run anywhere from 1 year to 4. Only two indicated that they included paratyphoid with their typhoid inoculations, although probably a number of the others did as well.

An interesting variant of the usual three shots every three years (although this was not indicated by the responses) consists in giving one shot annually, a plan adopted first in Mississippi and used in some other places as well. This might be given along with the pertussis booster shot, the Schick test, and the tuberculin test, as part of the annual check-up that every child should have.

Tuberculosis

Tuberculin testing is apparently not nearly so generally accepted by the Fellows queried as are the other measures. Seven of the seventeen answered that they do not do a routine tuberculin test; three others did not answer the question. One gives it annually; one gives it at 1, 3, and 6 years; one gives it at 3, 6 and 12 years; one gives it without specifying when. This response has nothing to do with the use of the test for diagnostic purposes in special cases; what concerns us here is its use on *all* children seen.

The pertinent question comes at once to mind: If so few of the Fellows of the Academy take this seriously, where do the great mass of physicians in general practice stand? The work of our own Dr. P. P. McCain in widening the scope of the fight against tuberculosis by tuberculin-testing all the children in the public schools and many in the private institutions and examining by x-ray those who are positive, has enormously strengthened our defenses against the Great White Plague. But it leaves the pre-school child and the infant outside the pale; and we know how serious early tuberculosis in these two groups can be. More than that, it leaves undiscovered the dangerous contact source. Until the pediatricians adopt this measure, we need hardly expect the family doctor to take it up.

Conclusion

Now that we have assembled this material on the measures being taken by pediatricians in the state toward immunization against serious diseases, what are we going to do

with it? I am going to drop the whole problem—if you agree with me that it is a problem worth tackling—in the lap of this section for discussion and then for action. By action, I mean working out a plan that is both simple enough and practical enough to be recommended to *every* physician in the state for application to *every* child who comes under his professional care; and then presenting this plan to our parent State Medical Society. I hope you will think this matter important enough to appoint a committee, with power to act.

Frankly, I know of no panacea—no easy plan for calling all these essential procedures to the attention of parents, and then administering them to our children. I have sketched out a little plan⁽³⁾ for including such immunizations in the care of the infant during the first year which many men offer their patients. Certainly it must be possible to hit upon a satisfactory schedule. Until we do this, we may as well realize that comparatively few children will get all the protection that present-day medicine offers.

Before closing, I should like to call to your attention the possibility of a simpler solution that is already looming in the offing. This is the use of associated or multiple or combined immunizations, which holds out the promise of giving us a greatly simplified procedure that would telescope our protections into a much briefer compass. The increasing number of sure-fire preventive immunizations against diseases that are widespread, serious, and generally difficult or impossible to cure, has been forcing some such combinations upon workers. But such combinations have been held back by a justifiable fear of the possibility of heightened reactions; and also of the possibility that these immunizations might weaken or interfere with one another, or in some way prove incompatible, as drugs in the old-time shot-gun prescription had a way of doing. Here are some of the combinations that have been made in the past:

One of our respondents has been mixing his own diphtheria and pertussis material for children who come to him too late for the early whooping cough protection he prefers. One of the drug houses has recently offered this mixture.

Another Fellow has been giving diphtheria toxoid in one arm and smallpox vac-

nation in the other in his pre-school round-ups; and he is hoping to add tetanus toxoid as soon as it can be obtained free for these youngsters. Many of us who were Medical Officers in the first World War remember that it was routine procedure during that unpleasantness to add to the soldier's discomfort by giving him typhoid and paratyphoid A and B in one arm and smallpox in the other as a preliminary to a stiff hike in the sun.

Davison, in his *COMPLEAT PEDIATRICIAN*⁽⁴⁾, states: "Although the reactions may be greater, children may be immunized simultaneously against Diphtheria, Tetanus, Pertussis, Smallpox, and Typhoid-Paratyphoid Fever." It remained for Ramon, however, to point out that several authors have demonstrated that some of these immunizations actually heighten the efficacy of those in company with which they are administered. He cites this combination:

Diphtheria and tetanus anatoxin (toxoid) and typhoid and paratyphoid vaccine, made compulsory in the French army in 1936 for 800,000 soldiers, with a decrease in diphtheria morbidity and no case of tetanus.

Our own army seems to surpass every other group in combining immunizations, as in so many other things; for, although I have not yet been able to get exact details, I understand that all men on entering the service receive immunizations against smallpox, diphtheria, tetanus, typhoid-paratyphoid, typhus and yellow fever, pretty close together. Perhaps some of you can tell us more about this biggest combination to date.

If it is permissible, I should like to suggest that we eliminate from our discussion the finer points of dosage, reactions, choice of biologicals, and so forth; and confine our deliberation to the crucial matter of how best to simplify the whole procedure so that every child shall get the protection that present-day medicine has made possible for him against these six captains of the men of death. No other group has yet succeeded in doing this; I sincerely hope that this group may succeed where others have not been so fortunate.

Abstract of Discussion

Dr. S. F. Ravenel (Greensboro): This is a very interesting, timely, and practical paper, which deserves serious attention, and which should bring

3. Richardson, F. H.: Can Our Children Escape? *Woman's Home Companion* (March) 1942.

4. Davison, W. C.: *The Compleat Pediatrician*, ed. 3, Durham, N. C., Duke University Press, 1940, pp. 316.

about the adoption of a definite program to include all these immunizations.

I think that many of us would do well to start vaccinating infants against smallpox much earlier than we do. Those who have tried it in the first few months have been agreeably surprised at the very mild reaction which these infants experienced.

Dr. Aldert S. Root (Raleigh): It seems that combined immunization against diphtheria and tetanus would be ideal for infants, and I have given many doses of combined diphtheria and tetanus toxoids. However, I understand that the Army officials were very enthusiastic over the administration of this tetanus-diphtheria toxoid to the soldiers, but that they were getting such violent reactions that they are actually contemplating stopping that until the preparation has been modified.

Dr. John H. Hamilton (Raleigh): In regard to the immunization of children against whooping cough, it is probable that a greater degree of immunity will be developed if the pertussis vaccine is given a little bit later in life than the third or fourth month, but the fact remains that our Bureau of Vital Statistics each year has a considerable number of deaths due to whooping cough listed for children under 3 months of age. The young child needs the protection and if the immunity is not so great when the vaccine is given before the third month of life, the booster shots can be given later on and the child will get the same long term protection that he would if pertussis vaccine were given in the sixth or seventh month.

The Army Medical School recommends annual booster doses of typhoid, after the first three initial doses have been given. The method of choice is to give it intracutaneously. One-tenth of a cubic centimeter intracutaneously will confer the same immunity as $\frac{1}{2}$ cc. subcutaneously, and there is usually no general reaction and only slight local reaction following the intracutaneous injection. Where mass immunizations are to be performed, however, in immunization clinics, subcutaneous injections will probably be preferred, because the vaccine can be given so much more rapidly.

Dr. W. C. Davison (Durham): I greatly enjoyed Dr. Richardson's paper. All of the procedures he mentioned are necessary, but as many of the children and certainly many of their mothers are becoming "needle-shy", efforts should be made to combine as many of these injections as possible. Most pediatricians use combined tetanus and diphtheria toxoid, and recently Dr. Denmark reported the use of combined pertussis vaccine and diphtheria toxoid. Combined pertussis vaccine and diphtheria and tetanus toxoid can now be purchased. The British have used combined typhoid-paratyphoid vaccine and tetanus toxoid.

Dr. McBryde, Dr. Arena and Dr. Martin are now combining all five antigens—that is, typhoid, paratyphoid, tetanus, diphtheria and pertussis. In children, the reactions are not greater, and the immunity is probably as high, if not higher, when these vaccines and toxoids are given in a mixture than when they are given individually.

I agree with Dr. Hamilton that if the mortality in pertussis is to be reduced, the vaccine must be given at the age of four months, even though as high a percentage of immunization is not obtained. A "booster" dose of vaccine at the age of 1 year will raise that percentage.

Dr. E. K. McLean (Charlotte), Chairman: Before proceeding to the next paper I want to ask the Section their wishes in regard to Dr. Richardson's suggestion that a plan be formulated to be recom-

mended to the medical society as a whole, in regard to these inoculations.

Dr. L. W. Elias (Asheville): I move that a committee be appointed to draft and present to the next Section for their approval recommendations for a unified method of administering these vaccines.

... The motion was duly seconded and carried.

INTRACUTANEOUS

vs.

SUBCUTANEOUS VACCINATION

Comparison of Immunologic Responses to Both Methods

DONALD S. MARTIN, M. D.

DURHAM

Army and Navy records of the last war show that more deaths and a greater loss in "man-days" were caused by the common infectious diseases than resulted from battle injuries of all types⁽¹⁾. Recognition of the effectiveness of active immunization against certain of these diseases is evidenced by the large scale immunization program now in effect in the armed forces. Because public health measures have so greatly reduced the incidence of certain infections, many individuals now reach adulthood without exposure to these diseases and are deprived of the opportunity to build up a natural immunity. This relatively non-immune population makes fertile soil for an epidemic which might be initiated if the usual public health safeguards are destroyed by air attack, or even if public health facilities are overtaxed by migrations of workers to defense factories located in areas inadequately prepared for them. Modern warfare is of such a nature that immunization of the civilian population, ordinarily protected by public health measures against diseases such as typhoid fever, is imperative.

The increasing susceptibility of adults to certain infections can be illustrated by the diphtheria problem. The accompanying chart shows the progressive increase during the last decade in the percentage of Schick positive individuals in three medical schools⁽²⁾.

¹ Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

² From the Departments of Bacteriology and Medicine, Duke University School of Medicine and Duke Hospital.

1. Davison, Wilbur C.: Reduction of Communicable Diseases among Troops and Children During National Defense Program, War Med., 1:563-572 (Nov.) 1941.

2. (a) Cadham, Fred.; Schick Tests in Medical Students, Canad. Pub. Health J. 33:14 (Jan.) 1942.

(b) Pulley, H. C. and Fleisher, Moyer S.: Schick Reactions in Students of Medicine, Am. J. Pub. Health 25:554-555 (July) 1935.

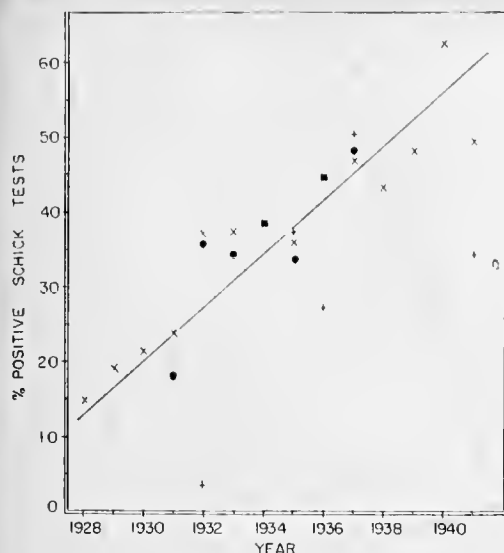


Fig. 1. Percentage of medical students with positive Schick tests.

Symbols:

Crosses—Cadham's series ^(2a)

Closed circles—Pulley and Fleisher's series ^(2b)

Plus signs—Duke series

This is an entirely different picture from that seen several decades ago, when 85 to 90 per cent of young adults were found to be immune. The decline in the diphtheria case rate, although admirable from the public health standpoint, has resulted in a great increase in the percentage of susceptible individuals, who are a potential source of danger.

A program involving active immunization of adults to various antigens is handicapped somewhat by the occasional severe reactions following subcutaneous or intramuscular injection of vaccines. The purpose of this discussion is to call attention to studies concerning the *intracutaneous* injection of small doses of vaccines or toxoids, and the immune responses and vaccination reactions obtained with this method.

Typhoid Fever

In 1937 we became interested in the antibody responses to intracutaneous injections of typhoid-paratyphoid vaccine. Dr. R. M. Perry determined the "H" and "O" agglutinin titers of medical students after subcutaneous and intracutaneous injections of typhoid-paratyphoid vaccine⁽³⁾. In one group

Table 1
Comparison of Agglutinin Responses

	No previous vaccination					
	1: 40	1: 80	1: 160	1: 320	1: 640	1: 1280
"H" titer						
Subcutaneous (8 students)		2	1	4		1
Intracutaneous (13 students)			5	3	3	2
"O" titer						
Subcutaneous (8 students)			3	2	2	1
Intracutaneous (13 students)			2	5	2	4
Previously vaccinated						
	1: 40	1: 80	1: 160	1: 320	1: 640	1: 1280
"H" titer						
Subcutaneous (20 students)	1		2	4	2	11
Intracutaneous (20 students)		1	5	3	6	5
"O" titer						
Subcutaneous (20 students)		2	3	4	6	5
Intracutaneous (20 students)		2	4	4	9	1

those previously vaccinated received only one intracutaneous injection of 0.1 cc. of a commercially prepared vaccine, the others receiving intracutaneous doses of 0.05, 0.1 and 0.1 cc. at weekly intervals. The dosages of the control group were 1.0 cc. subcutaneously for those who had been previously vaccinated and three doses of 0.5, 1.0 and 1.0 cc. at weekly intervals for those receiving vaccine for the first time. The results, recorded in table 1, indicated that there were no significant differences between the agglutinin responses of the students receiving typhoid-paratyphoid vaccine intracutaneously and those inoculated subcutaneously with doses ten times as large. The reactions were much less severe in the group receiving the intracutaneous inoculations (table 2).

Although Tuft⁽⁴⁾ was the first to advocate intracutaneous immunization against typhoid fever, Perry was the first to show that the "O" response to intracutaneous injection was as high as that obtained by subcutaneous inoculation. Recently, Tuft⁽⁵⁾ has shown

3. Perry, R. M.: Comparison of Typhoid "O" and "H" Agglutinin Responses Following Intracutaneous and Subcutaneous Inoculation of Typhoid Paratyphoid A and B Vaccine, *Am. J. Hyg.* 26:388-393 (Sept.) 1937.

4. Tuft, Louis; Yagle, Elizabeth M.; and Rogers, Stuart: Study of the Antibody Response After Various Methods of Administration of Mixed Typhoid Vaccine, *J. Infect. Dis.* 50:98-110 (Feb.) 1932.

5. Tuft, Louis: Further Studies of the Intracutaneous Method of Typhoid Vaccination, *Am. J. M. Sci.* 199:84-90 (Jan.) 1940.

Table 2
Comparison of Reactions

	Fever, malaise	Chills	Headache	G. I. Disturb.
Subcutaneous (48 injections into 28 students)	9	5	8	5
Intracutaneous (59 injections into 33 students)	2	1	2	1

that the sera of individuals immunized by intracutaneous administration of small doses of vaccine contains mouse protective antibodies in as good, if not better, titer than can be stimulated by subcutaneous injections of larger doses. Pooled sera from those inoculated intracutaneously seemed to contain more mouse protective antibodies than pooled sera from patients convalescing from the disease.

Van Gelder and Fisher⁽⁶⁾ compared the serologic responses of 285 children vaccinated for typhoid subcutaneously with those of 295 children inoculated intracutaneously. Although they found a definitely weaker "O" titer in the group given intracutaneous injections, the marked decrease in reactions and the excellent "H" responses led these authors to recommend the use of the intracutaneous vaccination against typhoid fever.

Diphtheria

Blatt, Fisher and Van Gelder⁽⁷⁾ studied the number of Schick reversals resulting from intracutaneous injection of diphtheria toxoid in comparison with the number of Schick reversals following the usual subcutaneous method of immunization. Since the alum precipitated toxoid frequently resulted in a persistent nodule, with an occasional sterile abscess, these authors preferred plain toxoid as the immunizing agent. Although the intracutaneous method caused no greater percentage of Schick reversals than did subcutaneous inoculations, the number of reactions was materially reduced. Kern, Crump and Cope⁽⁸⁾ particularly recommended the use of the intracutaneous method for diphtheria immunization in allergic individuals, because of the lowered incidence of reactions

and the successful immunization of a high percentage of Schick positive individuals. Keller⁽⁹⁾ also reported a definite decrease in the severity of reactions, and successful immunization by injecting diphtheria toxoid intracutaneously in small doses.

Scarlet Fever

The chief hindrance to the active immunization of individuals against scarlet fever by subcutaneous injections of Dick toxin is the frequency and severity of reactions following inoculation. It is, therefore, not usually considered practical to immunize individuals against this disease in an area such as this, where scarlet fever is a relatively minor problem. The results of investigations on this disease are presented here, however, to emphasize again the marked decrease in the number of reactions following intracutaneous immunization, without impairment of the immunizing value of the injected material. Fisher and Van Gelder⁽¹⁰⁾ reported a case of acute toxic nephritis due to the subcutaneous injection of *Streptococcus scarlatinae* toxin, and emphasized that 10 to 15 per cent of individuals inoculated subcutaneously with this material are likely to have severe reactions. With intracutaneous injections these authors obtained complete reversal of Dick tests in all of 120 Dick positive children, with a marked decrease in the number and severity of reactions. They recommend using three intracutaneous injections of toxin containing 800, 1600 and 3200 skin test doses at two and four week intervals, respectively.

Van Gelder and his associates in the series of papers cited^(6, 7, 10) attempted to determine the adequate immunizing dosages for the three diseases discussed above. Their recommended dosages are summarized in table 3.

Table 3
Intracutaneous Dosage

	Immunization against	No. doses	Size of doses	Interval
Van Gelder and Fisher ⁽⁶⁾	Typhoid fever	3	0.05, 0.1, 0.15	2-3 weeks
Blatt, Fisher & Van Gelder ⁽⁷⁾	Diph- theria	2	0.1, 0.2	3 weeks
Fisher and Van Gelder ⁽¹⁰⁾	Scarlet fever	3	800, 1600, 3200 S.T.D.	2 and 4 weeks

6. Van Gelder, D. W., and Fisher, S.: Intradermal Immunization. III. Typhoid Fever, *Am. J. Dis. Child.* 62:933-938 (Nov.) 1941.

7. Blatt, M. L.; Fisher, S.; and Van Gelder, D. W.: Intradermal Immunization. II. Diphtheria, *Am. J. Dis. Child.* 62:757-764 (Oct.) 1941.

8. Kern, Richard A.; Crump, Jean; and Cope, Thomas A.: Diphtheria Immunization of Allergic and Nonallergic Individuals by Intracutaneous Injection of Alum-Precipitated Toxoid, *J. Allergy* 6:325-331 (Sept.) 1935.

9. Keller, Arthur P.: Production of Immunity by the Intradermal Injection of Diphtheria Toxoid, *Am. J. Dis. Child.* 61:895 (April) 1941.

10. Fisher, Seymour, and Van Gelder, D. W.: Intradermal Immunization. I. Scarlet Fever, *Am. J. Dis. Child.* 61:88-98 (Jan.) 1941.

Discussion

The number of reports comparing the intracutaneous and subcutaneous methods of prophylactic vaccination are too small to justify the view that intracutaneous inoculations should replace the tried and true subcutaneous procedures. Especially among the armed forces, where it can be predicted that many men will be exposed repeatedly, vaccinations should be given by methods which are well established, in spite of an occasional severe reaction. Since children are known to tolerate larger doses of vaccines and toxoids with relatively little reaction, the subcutaneous method probably should be retained.

It is believed that the intracutaneous method deserves consideration by physicians in civil practice, particularly for the immunization of adults, since adults are much more likely to react severely to subcutaneous injections of large doses of antigen. This method apparently offers a means of effectively immunizing people of the allergic type.

As stated above, immunization of the adult civilian population seems advisable in the present emergency, not only because of danger to existing public health facilities, but also because of evidence suggesting that modern adult populations contain more individuals susceptible to certain infectious diseases than was the situation at the time of the last war. Although there are a limited number of infections against which prophylactic vaccination measures are available, any reduction in the incidence of these diseases in an emergency should be of some aid in lessening the burden which will have to be carried by the remaining civilian physicians.

Conclusions

Although comparative immune responses to subcutaneous and intracutaneous injections of antigenic materials have been studied in only a few laboratories, and in a limited number of diseases, the results indicate that:

- (1) The immune responses to intracutaneous injections of small doses of typhoid-paratyphoid vaccine, diphtheria toxoid and Dick toxin are equally as good as those produced by subcutaneous injections of larger doses of the same materials.
- (2) The incidence and severity of reactions are markedly reduced.

FURTHER EXPERIENCES WITH THE TECHNIQUE OF ADMINISTERING BLOOD AND OTHER FLUIDS VIA THE BONE MARROW

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When the administration of blood and other fluids directly into the general circulation is indicated, and when, for any reason, suitable veins for injection are not available, the solution can be infused *via* the red bone marrow. Substances so injected are taken up immediately into the venous circulation unchanged⁽¹⁾.

To date, the procedure for the administration of parenteral fluids has been used 116 times in 90 patients. Fifty-two of these individuals were adults and 38 were children under 10 years of age. These experiences have convinced us of the utility and safety of the method, if employed properly, when indicated, and with due regard for the necessary precautions. In most patients receiving fluids by this technique the need for rapid administration was not great, but administration directly into the circulation was required, and the veins, for one or another reason, could not be used. The incidence of local or constitutional reactions following this form of therapy, has, in our experience, been low. This brief review is presented to discuss further experiences, complications, and slight modifications in technique.

Technical Precautions

In the administration of fluids in adults, it is imperative that sternal landmarks be carefully observed and that not more than one puncture be made in either the manu-

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1. (a) Tocantins, L. M.: Rapid Absorption of Substances Injected Into Bone Marrow. *Proc. Soc. Exp. Biol. & Med.* 43:292-296 (Oct.) 1940.
- (b) Tocantins, L. M. and O'Neill, J. F.: Infusion of Blood and Other Fluids Into Circulation via Bone Marrow. *Proc. Soc. Exp. Biol. & Med.* 45:782-783 (Dec.) 1940.
- (c) Tocantins, L. M., O'Neill, J. F. & Jones, H. W.: Infusions of Blood and Other Fluids via Bone Marrow: Application in Pediatrics. *J. A. M. A.* 117:1229-1234 (Oct. 11) 1941.

brum or the body of the sternum within twelve hours' time. If a needle is removed from one site and a second puncture is made nearby, part of the fluid running in *via* the second orifice will escape *via* the first one, the amount depending on the rapidity of flow, the pressure of the infused fluid, and the proximity of the holes to each other.

If a needle is inserted into the sternum, tibia or femur, and after marrow has been aspirated difficulty is experienced in securing adequate fluid flow, the needle may be withdrawn 1-2 mm. or rotated 90 or 180°. Such manipulation may release the needle orifice from pressure against dense marrow trabeculae or bone cortex. With the special needle designed for these infusions, the direction of the bevel can be determined by the position of the small hole in the needle hub, and by the direction of the wings.

If a manubrial puncture gives an unsatisfactory result, the needle may be removed and inserted into the upper portion of the sternal body, 2-3 cm. below the angle of Louis. Fluid infused *via* the body of the sternum will not escape through an orifice in the manubrium, since there is no anatomic communication between the marrow in these two parts of the sternum.

If it should so happen that unsuccessful punctures are made in both the manubrium and the upper body of the sternum, another orifice can be made in the lower portion of the corpus sterni, provided the distance between the openings in the sternal body is at least 7-8 cm., and provided fluid is not given at too great a pressure. Such a procedure can, in an emergency, be carried out; for fluid infused *via* the sternum penetrates adjacent marrow tissue to a slight degree only and makes its exit rapidly through the emissary veins leading off from the puncture site.

On one occasion, three transfusions were given successfully to the same patient within four days, all in the manubrium at sites within 5-10 mm. of each other. This indicates that no reflux through a previously made opening will occur if time is given for the orifice to be sealed off.

When a definite, sudden decrease in resistance is not felt as the needle is passing through a bony cortex and entering a marrow cavity, caution must be exercised lest the point penetrate too deeply. Occasionally a very slight "grating" sensation on the

needle point will indicate its presence in the marrow. If the operator is in doubt concerning the position of the needle tip, suction should be applied to the needle several times during the process of insertion. In any case, no fluid should be injected unless marrow has been aspirated.

The skin and subcutaneous tissue at the puncture site must be held firmly to prevent confusion of landmarks and deviation of the needle. This is of particular importance in children, where a lateral needle deviation of a few millimeters may result in total failure to enter the marrow cavity.

When amounts up to 100 or 150 cc. of fluid are administered to children, gravity flow, multiple syringes, or a simple apparatus as pictured in figure 1 may be used.

Proper splinting of a child's hip, knee and ankle is imperative. An effective method of maintaining the foot in the proper position is the use of a so-called "clove hitch" about the ankle with traction made to the foot of the bed or end of the splint. To avoid interference with venous return, no constricting clothing or bandages should be applied to the extremity above the site of the puncture. The need for strict asepsis is obvious.

In infants under 6 months, the outer 15 gauge needle should be removed and the inner 18 gauge needle and stylet should be used. This smaller needle penetrates well with only a little boring and causes less trauma to a tiny bone. Added care must be utilized, however, to prevent breaking the needle while it is being inserted.

When fluids are infused by gravity, a flask height of 4-5 feet above the floor is usually adequate, and the rate of infusion will average over 2 cc. per minute. Crying or straining on the part of the child will increase the intrathoracic pressure and impede the venous return through the thorax with a resultant decrease in the rate of flow of the infusion. Quieting an excited child by one means or another will aid intake from the marrow cavity. Most children receiving fluid by gravity flow through the marrow will sleep during the procedure.

When single or multiple syringes are used, very slight twitching of the child's leg or lateral deviation of a syringe may snap off the tip of the barrel. Removal of the tip from the needle hub may necessitate removal of the needle from the bone, and will so delay the procedure that by the time the hub

Report of Cases

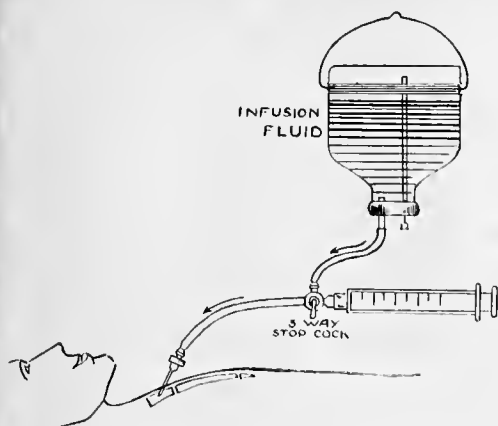


Fig. 1. Diagram of simple apparatus for the rapid injection of fluids via sternal marrow. The same equipment can be used for the injection of small amounts of fluid via the tibial or femoral marrow in infants.

is cleaned, the marrow will have clotted, making further infusion impossible. To prevent this difficulty a short section of rubber tubing should be interposed between the syringe and the needle hub. An apparatus which has been previously reported⁽²⁾ or one such as that pictured in figure 1 is inexpensive, can be assembled readily, and for practical purposes is a closed system. It comprises a manually-operated, three-way stopcock, with two short lengths of rubber tubing, one leading from the fluid reservoir to the valve, and the other from the valve to the infusion needle. The former should be thick walled to prevent its collapse when suction is applied; the latter should be thin walled (1 mm. or less) to act as a buffer and protect the marrow sinusoids from any excessive pressure which might be exerted on the piston.

When an infusion has been completed the needle should be grasped firmly with one hand and the patient's leg or sternal area secured with the other. The needle is then removed by simultaneously twisting and withdrawing, using motions opposite to those used to insert it. The puncture site should be covered with a small sterile dry dressing, with the added precaution in an infant of sealing the entire dressing with adhesive tape for two days to prevent contamination by feces and urine.

2. Tocantins, L. M., O'Neill, J. F., and Price, A. H.: Infusions of Blood and Other Fluids via Bone Marrow in Traumatic Shock and Other Forms of Peripheral Circulatory Failure, *Ann Surg.* 114:1095-1092 (Dec.) 1941.

In the emergency treatment of shock and other forms of peripheral circulatory collapse, fluids given subcutaneously or intramuscularly are ineffective. The rapid administration of fluids into the venous system is often the only means of restoring the circulation to normal. For various reasons, but particularly because of collapse, the peripheral veins may be inaccessible to venipuncture, thereby making it necessary to dissect out the vein and insert a cannula, a procedure that is time-consuming in an emergency, and furthermore involves destruction of the vein and formation of an open wound. Utilization of the intramedullary route in such emergencies frees the physician from dependency on peripheral veins and affords a route for the rapid administration of unchanged fluids directly into the circulation.

Seven patients suffering from shock or other forms of circulatory collapse have been treated by the rapid administration of fluids *via* bone marrow. The equipment used and the detailed results obtained in four of these cases have been discussed elsewhere⁽²⁾. Protocols of the three remaining cases are herewith presented, two demonstrating an uncomplicated result, and the other pointing out a serious but non-fatal complication, resulting from improper technique.

Case 5 (From the service of Dr. R. W. Spicer, North Carolina Baptist Hospital and Bowman Gray School of Medicine, Winston-Salem, North Carolina). F. M. F., a white female, aged 27, was found to have a central placenta praevia during the last trimester of pregnancy. Slight activity resulted in vaginal bleeding, making it necessary to keep the patient at rest in bed for several weeks until viability of the fetus was assured. On November 3, 1941, a low cesarean section was done under ether anesthesia. The preoperative blood pressure was 106 systolic, 70 diastolic, and at the end of the operation, which was attended by moderate blood loss, she was in profound shock. The blood pressure was unobtainable and the pulse was 140. An intravenous infusion of 5 per cent glucose in saline was given while the abdominal wall was being closed. The patient was returned to her room at 3:05 p. m. at which time her blood pressure was 46 systolic and 20 diastolic, with a pulse rate of 140. Between this time and 4:30 p. m.

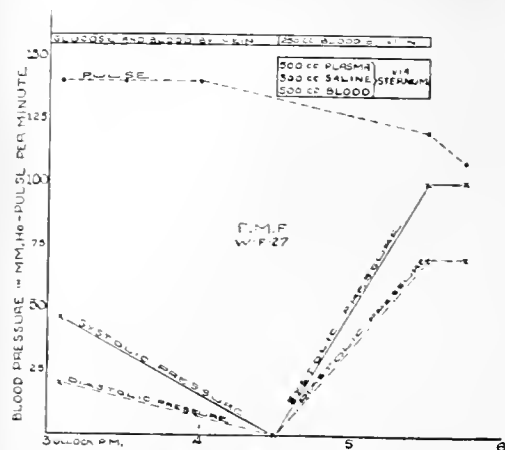


Fig. 2. Response of pulse and blood pressure of F.M.F. (case 5).

she received constant infusions of glucose in saline and blood *via* her arm veins, which were small in caliber and unable to transmit blood rapidly. Because of this inadequate flow through the veins, at 4:30 p. m. one of us (J.F.O'N.) was consulted as to the desirability of supplementing the administration of fluid with a transfusion *via* the sternal marrow. At this time her blood pressure could not be obtained and her pulse was imperceptible. A transfusion of blood was started *via* the sternal marrow by gravity flow, but because it ran slowly, it was felt advisable to use syringes for active injection of the material. Within an hour the patient received 500 cc. of citrated blood, 500 cc. of plasma and 300 cc. of saline *via* the sternal marrow (21.6 cc. per minute). All this fluid was administered by multiple syringes. During this hour she also received 250 cc. of citrated blood *via* her right arm veins. Her total intake by infusion was thus 1550 cc. in one hour. At the end of this time her blood pressure was 100 systolic, 70 diastolic, and her pulse rate 120 per minute. Her condition remained satisfactory thereafter and her convalescence was without event. (Fig. 2.)

Case 6 (From the service of Dr. Fred Garvey, North Carolina Baptist Hospital and Bowman Gray School of Medicine, Winston-Salem, North Carolina). B. J. W., a white female, aged 37, had a staghorn calculus in her left kidney. On January 12, 1942, under avertin (40 mg. per kilogram) and cyclopropane anesthesia, a left nephrolithotomy was done. The procedure required

one hour and twenty-five minutes, and a transfusion of citrated blood was started before the operation was finished. The patient was returned to her room at 2 p. m. at which time her pulse was 112 per minute and her blood pressure was 80 systolic, diastolic uncertain. Forty-five minutes later neither blood pressure nor pulse was obtainable, and the blood transfusion was running slowly. At 3 p. m. a sternal needle was inserted into the manubrium, marrow was aspirated, and an infusion of glucose in saline started. This ran a few minutes and then stopped. The needle was removed, and the operator made a second puncture in the manubrium, but no marrow was obtained. Still a third puncture was made in the manubrium, and on this trial marrow was aspirated, and within twenty minutes 500 cc. of citrated blood was administered by syringes (25 cc. per minute). At the end of this time her blood pressure was 110 systolic, 70 diastolic. She then received further infusions of plasma and glucose in saline *via* the sternal marrow, so that by 7 p. m. the total fluid volume administered reached 2500 cc. At this time her blood pressure was 80 systolic, 60 diastolic, and her pulse 152. Three hours later, at 10 p. m., her pulse was 150 per minute and her blood pressure was not obtainable. Her color was good, the veins filled well, and the skin was dry. An electrocardiogram showed sinus tachycardia. Her condition remained the same for the next ten hours, with a pulse of 150, an imperceptible blood pressure, slight respiratory difficulty, a warm, dry skin, well filled veins, and good color. The patient was rational. At the end of this time her blood pressure was 62 systolic, diastolic uncertain. An x-ray study of the chest showed fluid in the right pleural cavity, and 350 cc. of bloody fluid was removed. The venous pressure at this time was normal, and the rectal temperature fluctuated between 38.2 and 39.0 C. The blood pressure became stabilized at 110 systolic, 70 diastolic, but the patient continued to run the same type of fever, with scattered rales over the right lower lung. On January 16 an x-ray study revealed pneumonitis in the right middle and lower lobes. In addition the superior mediastinal shadow was enlarged in the transverse diameter with extension up into the neck. Dr. J. P. Rousseau felt that these shadows indicated mediastinitis. Her condition gradually improved, with a stable blood pressure and a gradually subsiding

temperature. On January 20, 75 cc. of bloody fluid was removed from the right chest, and an x-ray examination on the same day showed normal mediastinal shadows with a hazy right lung field, a thickened interlobar pleura and a small area of pneumonitis in the medial part of the right lower lobe. By January 25, the temperature was normal, and the wound was healing well. On February 7, x-ray examination of the chest was negative. She was discharged on February 7, 1942. On March 11, 1942, re-examination of her chest by x-ray was entirely negative.

Case 7 (From the services of Drs. Wingate M. Johnson and Robert A. Moore, North Carolina Baptist Hospital and Bowman Gray School of Medicine, Winston-Salem, North Carolina). N. L. J. C., a white female, aged 34, was admitted at 6 p. m. on July 6, 1942, for treatment of injuries sustained in an automobile accident a half hour previously. Clinical and x-ray examinations revealed a cerebral concussion, fractures of the right sixth, seventh, eighth, ninth, tenth and eleventh ribs in the post-axillary line, right hemopneumothorax and multiple abrasions and contusions. Three hours after admission the blood pressure was unobtainable and the pulse rate was 160. The patient was quite drowsy, with a cold, moist skin and cyanotic discoloration of her lips, forearms and lower legs. The peripheral veins were collapsed and all attempts at venipuncture were unsuccessful.

One of us (J. F. O'N.) was consulted concerning the administration of plasma *via* the sternal marrow. At this time the pulse rate was 160 per minute and the blood pressure could not be obtained. Using the apparatus diagramed in figure 1, 250 cc. of 50 per cent plasma in saline was given *via* the marrow of the manubrium over a period of ten minutes (25 cc. per minute). At the end of this time the blood pressure was 52 systolic and 40 diastolic. Physiological solution of sodium chloride was then allowed to run in by gravity flow for a period of five minutes while transfusion equipment was being assembled and adjusted. Citrated blood was then administered through the same needle by gravity flow. During this time there was a steady rise in the blood pressure levels and a steady decrease in the pulse rate.

About thirty-five minutes after the blood transfusion was started, the rate of flow decreased, because small clots were hindering

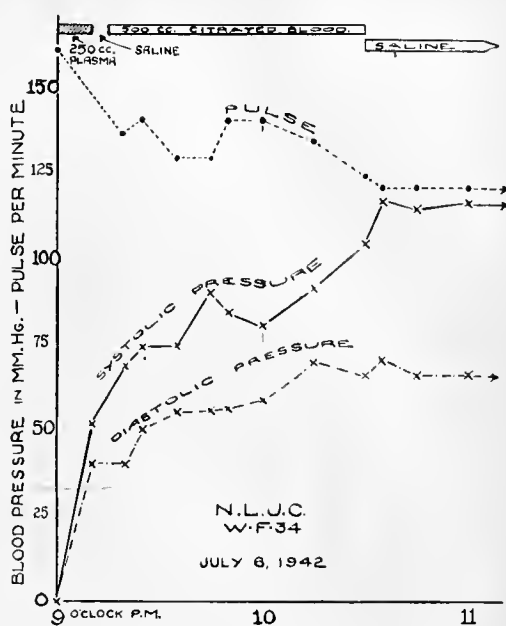


Fig. 3. Response of pulse and blood pressure of N.L.J.C. (case 7).

the flow through the blood filter. This decrease in the rate of flow was accompanied by a slight increase in pulse rate and a slight fall in blood pressure. Improvement was promptly resumed when the rate of flow of the transfusion was increased. Two hours following the start of the fluid therapy *via* the sternum the pulse rate and blood pressure had become stabilized (fig. 3). Since that time the patient has had no further evidences of circulatory difficulties, and her convalescence is progressing in a satisfactory manner.

Comment

Cases 5 and 7 exemplify an uncomplicated successful result when this procedure is used properly in the emergency treatment of circulatory collapse.

Case 6 presents many confusing clinical findings which are hard to correlate. Certainly the major technical error in the treatment of this patient was the repeated insertion of the needle into the manubrium within a short time. It is probable that the second puncture penetrated the posterior sternal plate, for no marrow was obtainable by aspiration. Immediately following this, blood and plasma were infused rapidly *via*

the third puncture site in the manubrium, and it seems very probable that some of the fluid escaped into the mediastinum through the opening made in the posterior plate by the second needle puncture. There is no adequate anatomic explanation which would correlate the sternal infusion and mediastinal fluid with the bloody fluid found in the right pleural cavity, unless some anomaly of the right mediastinal pleura was present, permitting infused blood to pass into the right pleural space. There is further no adequate explanation for the period of hypotension which lasted twelve hours. It has been suggested that the patient had a generalized peripheral vasospasm. Another mechanism that might explain the hypotension, as well as the bloody right pleural effusion, is that of a moderately large right pulmonary infarction. A small percentage of patients with pulmonary infarction develop serosanguineous pleural effusions³.

In case 7, during the recovery period, there occurred a temporary decrease in the rate of flow of the transfusion due to small clots in the filter. At this same time there occurred a slight fall in blood pressure and increase in pulse rate. As soon as the rate of flow was adjusted to its previous rate (6.6 cc. per minute) improvement in pulse rate and blood pressure was resumed.

This would tend to indicate the importance of maintaining an adequate and uninterrupted rate of absorption of parenteral fluids during the period of active treatment of shock and until the patient's vasomotor and circulatory mechanisms have fully recovered their function.

The importance of knowing the proper anatomic relations involved in the technique of giving fluids *via* bone marrow cannot be stressed too greatly. For this purpose the careful study of and practice on cadavers is ideal. Such experience will familiarize the operator with the location, size and relations of the available bone marrow depots. Such study and trial will teach as nothing else can the proper motions and pressures needed to insert the needle and allow the operator to experience the sensation or "feel" which is peculiar to the passage of a needle through a bony cortex. Basic anatomic study and cadaver practice are essential prerequisites to the successful utilization of the intramedullary route of parenteral therapy.

3. Krause, Geo. R. and Chester, Edw. M.: Infarction of Lung; Clinical and Roentgenologic Study, Arch. Int. Med. 67:1144-1156 (June) 1941.

Summary

Infusions of blood and other fluids have been administered *via* bone marrow by us 116 times to 90 patients.

Suggestions are made to clarify and improve on small but important details of the technique.

Intrathoracic complications in a patient on whom faulty technique was used are discussed.

Two further instances of rapid recovery from circulatory collapse following injection of parenteral fluid *via* sternal marrow are presented.

THE CRIMINAL INSANE

JULIAN W. ASHBY, M. D.

Superintendent, State Hospital

DIX HILL

The criminal insane of the state of North Carolina are committed to a special building connected with the State Hospital at Raleigh, and such commitments are made by one of two processes. One is by order of the Superior Court, when an individual is charged with crime and is considered unable to plead to the bill of indictment. The second method is by transfer from the State Penitentiary. When a prisoner displays mental symptoms, he can be committed through the Clerk of the Court of Wake County to the Criminal Insane Department.

When this report was tabulated on April 1, 1942, there were 174 patients incarcerated in the Criminal Insane Department. Of this number 56 were admitted from the prison, and 118 from the courts. For the year ending April 1, 30 patients were admitted to this department, 28 were discharged, and 9 died. Those who are admitted from the courts are detained until their mental disorder improves to the extent that they can be returned to court for trial, and those who are admitted from the Penitentiary are returned there when, and if, sufficient improvement occurs. If the individual does not improve mentally, he is not released from the department, even when his term as a prisoner expires.

Table 1 indicates the types of mental disorders which are represented, and table 2 the crimes charged against the individuals. It will be noted that of the population of 174, 29 are charged with murder. These

Table 1

Types of Mental Disorders Represented in the Criminal Insane Department, Dix Hill

Mental deficiency with and without psychosis	59
Dementia praecox	54
Epilepsy	17
Psychosis with cerebral arteriosclerosis	11
Manic depressive psychosis	8
Psychotic personality without psychosis	6
Undiagnosed	5
Paranoid condition	4
Paresis	4
Psychotic personality with psychosis	2
Chorea	1
Involutional melancholia	1
Postencephalitis	1
Senile psychosis	1
Total	174

Table 2

Crimes Represented in the Criminal Insane Department, Dix Hill

Assault	62
Manslaughter and murder	29
Breaking and entering	15
Larceny, robbery, and receiving	15
Arson	7
Rape	7
Crime against nature	5
Drunkenness	4
Destruction of property	3
Carnal knowledge	2
Charge unknown	2
Forgery	2
Indecent exposure	2
Making whiskey	2
Peeping Tom	2
Prostitution	2
Public nuisance	2
Vagrancy	2
Accessory after fact of murder	1
Accessory before fact of murder	1
Bigamy	1
Disorderly conduct	1
Incest	1
Perjury	1
Resisting an officer	1
Sodomy	1
Using profane language	1
Total	174

crimes were committed by patients suffering from the following disorders:

Dementia praecox	21
Paranoid condition	3
Epilepsy	2
Manic depressive psychosis	1
Paresis	1
Psychosis with cerebral arteriosclerosis	1

As would be expected, the majority of the crimes of a serious nature are committed by those suffering from dementia praecox

and paranoid conditions, and are instigated by delusions of persecution.

The majority of these patients were under the age of 40 when they were committed (table 3), and a large percentage have little or no education (table 4).

Table 3

Age of Criminal Insane Patients on Admission

Under 20	24
20 - 30	48
30 - 40	41
40 - 50	27
50 - 60	14
60 - 80	13
Unknown	7

Table 4

Educational Level of Patients in Criminal Insane Department, Dix Hill

None	44
First to fourth grade	71
To fifth grade	19
To sixth grade	9
To seventh grade	7
To eighth grade	8
To ninth grade	9
High school or more	7

A STUDY IN CONTRACEPTION: REPORT OF BIRTH CONTROL CLINIC, TWO YEARS' OPERATION

IRMA HENDERSON-SMATHERS, M. D.

ASHEVILLE

It is hardly necessary to say that the importance of spacing children in the interest of the public health makes birth control a part of preventive medicine. It is accepted as such by the State Board of Health, and controlled by the medical profession instead of the laity. The sponsorship of local health department contraceptive programs by the State Board of Health has been carried on quietly. There are now seventy-nine clinics operating in fifty of the one hundred counties of the state.

The Buncombe County Health Department, three or four years ago, became interested in the problem of contraception, and, cooperating with the State Health Department, made the sponge and foam powder method available. At about this same time the Asheville City Health Department introduced into its prenatal clinic the diaphragm and jelly method of contraception, which was

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abandoned after a short time. The County Health Department's interest in this problem continued, however, and in January, 1940, a Birth Control Clinic was organized, which has functioned continuously since that time. The purpose of this paper is to report on twenty-six months of clinic service and to explain the clinic program and mode of operation.

The Birth Control Clinic accepts no patients unless they bring statements from their family physicians or are referred through the Welfare Department with the approval of the Welfare physician. We ask each physician to state in these notes that the patient is entitled to contraceptive advice and his reason for referral.

The clinic meets one hour before the scheduled arrival of the physician in charge, and during this time histories are obtained privately. Five nurses work to facilitate the handling of the patients. The clinic supervisor, a nurse, then takes these patients in groups of five or six into a small room, where, with a model of the female pelvis and several old diaphragms, she instructs them in the proper technique and care of the diaphragm. The instructions consist essentially of the following:

1. The diaphragm is so far the safest of contraceptives. It is not guaranteed to prevent all pregnancies.
2. The diaphragm is comfortable and harmless.
3. It must be used for every intercourse.
4. It is never sterilized, but should be washed with pure soap and water after using. It must be rinsed, dried thoroughly, powdered with any talcum powder or flour, and "aired" occasionally. Any chemical or hot water will destroy the diaphragm.
5. It is well rinsed, jelly is applied to the rim and center (this is accompanied by a demonstration), and the diaphragm is inserted just before each intercourse and after emptying the bladder.
6. It is worn for at least six hours after intercourse and a douche of one quart of plain water is taken before and after the diaphragm is removed. The diaphragm should not habitually be worn longer than eight hours.
7. A diaphragm will last two years if properly cared for.

Table 1

Types of Previous Contraceptives Used

1. Condom	193
2. Douche	119
3. Foam powder and sponge	12
4. Lanteen	29
5. Diaphragm	7
6. Jelly	10
7. Suppository	4
8. Withdrawal	11
Total	385

Table 2

Reasons for Seeking Contraceptive Advice

<i>Clinic Cases</i>	<i>Already Enough Children</i>	<i>Child Spacing</i>	<i>Medical Reasons</i>	<i>Mental Reasons</i>	<i>Financial Reasons</i>	<i>War</i>
Jan.-June, 1940	31	42	29	1	26	0
July-Dec., 1940	28	36	28	0	28	0
Jan.-June, 1941	20	40	36	0	28	0
July-Dec., 1941	15	45	28	1	31	0
Jan.-March, 1942	2	33	1	0	3	0
<i>Private Cases</i>						
Jan., 1935-May, 1942	14	52	12	1	13	18
Totals	110	248	134	3	129	18

At the conclusion of the class, the patients are ready to be fitted with diaphragms. There are four tables kept in constant use in our clinic, each provided with a set of fitting rings and sterile solutions. A nurse is in attendance at each table to assist with instruction. The doctor keeps three tables for new patients and one table for recheck examinations. The fitting rings are used to obtain the approximate size, and very rarely is it necessary to use more than one diaphragm for a patient. It is simpler to sterilize rings than diaphragms. I do not use or like the diaphragm introducer. It is always necessary for the doctor to place the diaphragm in position and allow the patient to become familiar with that position before "practice" begins. Each woman is allowed to insert the diaphragm until she is satisfied that she understands its use, and she is not allowed to leave the clinic until she is placing it correctly. On leaving, she is given either creme or jelly, according to her preference. The women of our clinic use each in about equal quantity.

Patients are instructed to return after two to four weeks for a check-up. At this visit the supervisor questions them concerning the correct insertion of the diaphragm—whether or not the cervix is felt to be covered—and asks if there is any discomfort to the patient or the husband. If so, this is called to the attention of the doctor. She

Table 3

Clinic Cases	No. of Patients	Average Age	Average No. of Children	Diaphragm		Creme	Jelly	Sterilization Operation		Pregnancies
				Used	Not used			Male	Female	
Jan.-June, 1940	129	29	3½	108	21	61	68	0	5	14
July-Dec., 1940	120	28	3 plus	109	11	52	68	0	1	10
Jan.-June, 1941	124	27	3	102	22	57	67	0	0	7
July-Dec., 1941	120	28	3	108	12	45	75	0	0	10
Jan.-March, 1942	39	28	3	36	3	19	20	0	1	4
Total Clinic Cases	532	28	3 plus	463	69	234	298	0	7	45
<i>Private Cases</i>										
Jan., 1935-May, 1942	110	28-30	2	105	5	90	20	1	3	16
Total	642	—	3	568	74	324	318	1	10	61

emphasizes the importance of using the diaphragm at every intercourse, and checks on the care of the diaphragm. The patients are taught how to test the diaphragm for leaks. They then enter the fitting room and insert their diaphragms. The position is checked by the doctor and any discomfort or complaint remedied. Occasionally it is necessary to change the size of the diaphragm at this time. The women are requested to return after this visit every six months for check-ups, and to report if they become pregnant. A complete file is kept on each patient. The following tables contain statistics from the files of our clinic, and from those kept on patients seen in private consultation.

Our results compare favorably with those of the larger clinics. Until more is known about the "safe period" and its use is made more practical for the woman of low or average intelligence, the properly fitted diaphragm together with contraceptive jelly or creme will remain the contraceptive of choice.

The diaphragm used in the clinic is the Holland Rantos in all three types and in sizes from 50 to 105 mm. Both the Koromex jelly and H-R emulsion creme are dispensed. Women able to pay are charged \$1.00 for the diaphragm and \$0.25 for each tube of jelly. Both diaphragm and jelly are given to those unable to pay. We buy at a special discount direct from the company large lots of jelly, creme, and diaphragms. Jelly and creme are the same in price. One tube of jelly and one diaphragm costs us \$0.47. Thus the woman who can pay furnishes a diaphragm for one who cannot; yet she herself does not pay an excessive price. The clinic is self-supporting, the nurses working as part of their public health department duties.

The clinic exists as a health department function, and solicits the cooperation, interest and criticism of the medical profession. Any physician is welcome to visit the clinic at any time. It meets regularly on the second and fourth Fridays of each month from 1 to 4 p. m. in the Buncombe County Health Department in Asheville.

Table 4
Explanation of Pregnancies

Clinic Cases	True failure	Planned pregnancy	Pregnant when fitted	Did not return to clinic or use jelly	Did not use regularly or stopped its use (Own admission)	Never learned to use correctly
Jan.-June, 1940	1	—	1	1	8	2
July-Dec., 1940	2	—	—	—	9	—
Jan.-June, 1941	1	1	4	1	—	1
July-Dec., 1941	2	1	1	2	3	—
Jan.-March, 1942	1	1	1	—	—	1
Total Clinic Cases	7	3	7	4	20	4
<i>Private Cases</i>						
Jan., 1935-May, 1942	4	7	1	—	3	1
Totals	11	10	8	4	23	5

Thirty patients moved away and could not be located for check-up.

Dyspnea. — Do not give digitalis to a person simply because he is short of breath. A considerable number of patients have been referred to me for dyspnea who were getting digitalis but were no better for it. I have generally found in such cases states of chronic bronchitis or asthma with emphysema that were responsible, or nervousness with sighing respiration, or plain unfitness with obesity. The clue to most of these cases at once is the finding of a normal heart size. A good rule is that dyspnea is not due to heart failure or obstruction, as from mitral stenosis, if the heart size is normal.—Paul D. White: Fallacies in the Treatment of Heart Disease, New Orleans M. and Surg. J. 93:567 (May) 1941.

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A GOLDEN OPPORTUNITY

Never have our representatives in Congress been so eager to know the wishes of their constituents as they are now. There are a number of reasons for this. They know that the public generally is not satisfied with the conduct of the war on the part of the present administration, and that Congress must share a great part of the blame for the delay, the mismanagement, and the misinformation that have been so glaring. They know that the people have shown unexpected willingness to shoulder an enormously increased tax burden; but that they expect more adequate returns for their money than they have had thus far. They know that the people are thoroughly disgusted with the servile obeisance paid organized labor in its unpatriotic efforts to profiteer in our country's present life-and-death struggle. Those who come up for re-election this November know that their political future depends upon satisfying their constituents that their future intentions are honorable.

This state of affairs gives to doctors a golden opportunity to reason with their representatives; but it is an opportunity that must be seized at once, or it will be gone forever. In April, 1941, the American Medical Association

was found guilty in the Federal District Court of Washington of "criminal conspiracy to restrain trade." Last June this verdict was sustained by the Court of Appeals for the District of Columbia. An appeal has been made to the Supreme Court; but with this august body dominated by a large majority of handpicked New Dealers, its ruling—if, indeed, a hearing be granted—is almost a foregone conclusion. This means that the only recourse for the medical profession—and for all other professional groups as well—is in new Federal legislation. The truth of this statement is to be found in the decision of the Court of Appeals, which reads in part:

"... our task is not to legislate or declare policy in such matters but, rather, to interpret and apply standards and policies which have been declared by the legislature. That Congress did use the common law test there is no doubt. That Congress was not otherwise advised was perhaps because of the failure of the professional groups to insist upon the distinction and to secure its legislative recognition."

* * *

"When they go so far as to impose unreasonable restraints, they become subject to the prohibition of the Sherman Act. This then represents a limit to professional group activities. If it is desired to extend them beyond this point, legislation is required for that purpose. It may be desirable that this professional group shall be given such enlarged powers, but if so it will be necessary for the legislature to speak upon the subject rather than for the courts to recognize a privilege based upon preemption or usurpation."

It is highly probable—indeed, almost certain—that two bills will be introduced in Congress after the November elections: one, to exempt the professions from the "trade and commerce provisions" of the anti-trust laws; the other, to provide taxation, probably through payroll deductions, to pay for hospital care and possibly for sickness insurance. If every doctor in North Carolina will join the physicians of the other states in letting his representative know how the great majority of the profession feel about these two pieces of legislation, there can be little doubt of the result. It is not too much to say that it is imperative for the first measure to be passed and the second defeated, if

America's present high standard of medicine is to be maintained.

The members of the medical profession have the power to exert a tremendous influence upon our lawmakers; and at this time they can use this influence more effectively as individuals than as a group.

* * * *

PROFESSIONAL ADVISORS

Few things in this imperfect world are more enjoyable than the gratuitous management of the other fellow's business; it is so difficult to administer our own affairs and so delightfully easy to give brilliant and profound advice to others. This somewhat cynical meditation has been engendered by the present eagerness of the legal profession, from which our politicians are almost entirely recruited, to point out the delinquencies of the medical profession and to make jolly, light-hearted suggestions for their cure. Before accepting advice, however, it would seem wise to examine carefully the record for sagacity of the advisor.

We do not recall one single politician (ne'e lawyer) who in the Alice-in-Wonderland years preceding the financial crash of 1929 was foresighted or intelligent enough to suggest that the government take the simple steps necessary to prevent the constant distention of the bubble of inflation. Indeed, when the bubble burst, most of our solons were left holding the bag, along with the other suckers. As economic advisors their record is bad, and Dr. Samuel Johnson once remarked that when he found a man foolish in that which he understood, he thought it safe to judge him equally foolish in that which he did not understand.

Today our country is faced by the danger of inflation which makes that of 1929 seem microscopic. Are the lawyer-politicians showing more wisdom now in planning to avert the awful consequences of inflation than they did preceding the debacle of 1929? Or are they playing politics as usual, fearful of any act which might jeopardize their little jobs? Ceilings are willingly placed on everything but wages and farm products. Can it be that our economic and financial policies are in the hands of men who value their jobs more than the welfare of their country? We shake our heads sadly, because we think we know the answer. These are the men willing to take time out to run the affairs of the medical profession. God forbid! Mr. Arnold, God forbid!

THE REPORT OF THE STATE HOSPITAL INVESTIGATION BOARD

Five months after its appointment by Governor Broughton, the Board set up to investigate the State Hospital at Morganton made its report. During this time twelve days were given over to hearing witnesses. Six volumes of typewritten matter, a total of 1718 pages, were filled with the hearings of the Board.

The investigation was as thorough and systematic as it was possible for five busy people to make it. After an initial organization meeting and a tour of the State Hospital, witnesses—chiefly ex-patients, relatives of patients, and even patients—were heard. As was to be expected, the majority of those who volunteered to testify were those who felt that they or their relatives had been mistreated or persecuted; however, a surprisingly large number gave favorable reports.

After all who would had been given an opportunity to testify as to their personal observation or opinion of conditions at the Morganton Hospital, a transcript of the testimony was written out and a copy sent to each member of the Board of Investigation and one to Dr. Watkins, Superintendent of the Hospital. He and several members of the Hospital Board were then heard and their testimony was carefully taken down for study. After this the Board heard a number of expert witnesses, including Dr. Fred Williams, Superintendent of the South Carolina State Hospital, Dr. James K. Hall, Superintendent of Westbrook Sanatorium, Dr. James W. Vernon, Superintendent of Broadoaks Sanatorium and President-Elect of the State Medical Society, Dr. James Watson, State Director of Mental Hygiene, and Dr. W. S. Rankin, Head of the Hospital Section of the Duke Foundation.

The hearings were held publicly, except in the case of those witnesses who wanted their identity kept secret. Because of the great interest taken in the investigation by the general public the open consultation may have helped to convince some suspicious minds that the Investigation Board was determined to get at the facts, so far as was possible.

Complete transcripts of all the testimony were sent the members of the Board. Almost a month was spent by them in attempting to digest this material; then a full day and part of a night were spent in deciding upon the

nature of the report to be made, and in reconciling the various opinions as to the recommendations that should be offered. After much discussion and at times heated debate, the five members came to agreement upon the principal items of a report, and commissioned Judge Marshall T. Spears of Durham and Mr. L. C. Gifford, Editor of the *Hickory Record*, to draft it. A final meeting of the group was held to go over this report, to make a few minor corrections, and to sign it.

It is hard to praise too highly the masterly way in which Judge Spears and Mr. Gifford accomplished their difficult task. Unfortunately the Associated Press, with its flair for playing up the sensational, published in most papers of the state an abstract of the report which failed to catch the spirit of it. The report itself is a model of clarity and—considering its importance—of brevity. Some state papers carried the full report, and it is to be hoped that this will be read by enough people to make an impression upon the next legislature.

The important findings of the Board were that there was some mistreatment of patients, but that it was not approved or condoned by the management; that the food was sufficient in quantity, but lacking in variety and in vitamins; that the institution was woefully undermanned, both in attendants and in the medical staff; that not enough outdoor recreation and other occupational therapy were provided; and—most important of all—that the amount appropriated by the legislature was pitifully inadequate. This last finding explained most of the shortcomings of the institution.

The chief recommendations were:

1. Renovation and fireproofing of the few remaining buildings that had not yet been so treated. This included particularly the "old steam house," which should be furnished with adequate equipment for baking and roasting meats.
2. Increasing the number of the medical staff and of the attendants and nurses until it equals at least the national average.
3. Increasing the appropriation to equal the national average.
4. Modifying the archaic provisions for committing patients to the state hospitals.
5. Providing for certain centers throughout the state where patients may be kept under observation long enough to determine the nature of their condition, and whether they need commitment to a state hospital.

6. Setting up a unified Board of Control to have oversight of all the hospitals for mental disease in the state, with a psychiatrist at its head. It is suggested that this Board be composed of fifteen members, representing every section of the state, with at least three women members, with each of the medical schools in the state represented, and with the State Health Officer as an ex-officio member. The members are to serve for five years, but their terms are to be so staggered that no one administration can elect or appoint them all.

7. That, in view of the tremendous amount of extra work forced upon Dr. Watkins, he be made Superintendent of the buildings and grounds and that a younger man be employed to act as chief of the medical staff.

Those who have read the monumental report of the Commission headed by Dr. Fred Hanes six years ago will recall that most of the above recommendations were made by that Commission, after a year's exhaustive study, not only of the Morganton hospital, but of all other institutions in the state concerned with mental disease. Five busy citizens, none particularly acquainted with the needs of such an institution, could hardly hope to discover more in twelve actual working days than could a group of experts, backed by the resources of the Rockefeller Foundation, in a year's intensive research. The indebtedness of this recent Board to Dr. Hanes's Commission was acknowledged in its final recommendation:

"That serious thought be given to the very comprehensive and exhaustive survey made in 1936 by the commission for the study of the care of insane and mental defectives, and entitled, "A Study of Mental Health in North Carolina."

As was said in a previous editorial in this journal¹, it is indeed a sad commentary on human nature that such a painstaking and exhaustive study as was made by Dr. Hanes's Commission should have been quietly pigeonholed all these years, until a melodramatic series of newspaper articles reawakened public interest. Let us hope, however, that this interest will not die down until something is done by the next legislature to better the plight of the unfortunate victims of mental sickness.

1. The Morganton Investigation, North Carolina M.J. 8:190 (April) 1942.

THE AMERICAN GERIATRICS SOCIETY

During the Atlantic City meeting of the American Medical Association a new society was born: The American Geriatrics Society. Dr. Malford W. Thewlis, of Wakefield, Rhode Island, was most active in its creation. Dr. Thewlis is the author of a book on Geriatrics which has just gone into its fourth edition, and he is recognized as one of the foremost authorities on the subject of old age.

It is true that the number of medical organizations is becoming burdensome; but there is a growing need for a society devoted to the study of old age. The constantly increasing proportion of individuals past 60 in the general population, and the scant attention usually paid to their special needs are warrant enough for forming a group especially interested in the problems peculiar to the aged.

The officers of the new society are as follows:

Honorary President, I. L. Nascher, M.D.; Honorary Member, Lt. Col. J. W. Shuman, MC, USA; President, Lucien Stark, M.D., Norfolk, Neb.; First Vice President, Wingate M. Johnson, M.D., Winston-Salem, N. C.; Second Vice President, Walter E. Vest, M.D., Huntington, W. Va.; Secretary, Malford W. Thewlis, M.D., Wakefield, R. I.; Treasurer, Edwin B. Gammell, M.D., Hope Valley, R. I.; Executive Committee: Drs. Stark, Thewlis and Johnson. Membership Committee: Carl A. Williams, M.D., Walter E. Vest, M.D., John A. Bolster, M.D., Edward B. Allen, M.D., Malford W. Thewlis, M.D. Program Committee: Edward B. Allen, M.D., Roscoe H. Knowlton, M.D., Carl A. Williams, M.D., John A. Bolster, M.D., James M. Northington, M.D.

The purpose of the organization is "the study of diseases of advancing years: preventive and curative treatment." The constitution provides that "The members of this organization shall be graduates of recognized medical schools who are especially interested in this subject. They must be members of the state medical society." Anyone with such qualifications is invited to write for an application blank to Dr. Thewlis, Secretary, Wakefield, Rhode Island; to Dr. J. M. Northington, Charlotte; or to Dr. Wingate M. Johnson, Winston-Salem.

LUMBERJACKS IN THE FOREST OF ARDEN

There is a community in Scotland County which can not be located on a map of North Carolina. It is merely a cluster of homes affectionately known to hundreds of people as Riverton—the name given the old Star Route postoffice about the turn of the century.

Riverton is a community unique in many respects. For a century and a half its farm lands have remained in the hands of the original settlers, who emigrated from Scotland. Perhaps no other community of comparable size has had more influence upon the history of our state; but it is not the purpose of this editorial to call the roll of men prominent in the state and even in the nation who have come from it. Its chief distinction is the complete fascination it exerts upon all those who were born there, or whose parents or grandparents were born there. Those who rise up to call the old community blessed now number well into the seventh generation. Every summer scores of them return to pay homage to their beloved Lumbee River, to renew old ties, and to store up energy for another year's tasks. A dozen cottages have been built for use during the vacation months.

Within the past few weeks a rumor has arisen that has greatly disturbed the peace of the community. A huge defense project is being constructed on the outskirts of a nearby town, and its boundaries already come within six miles of Riverton. The rumor is that this project may spread so that it will engulf this historic community, dear to the hearts of so many. That its sons and daughters are not lacking in patriotism is attested by the decimated ranks of the men between 20 and 45 in the community. Some who fought in World War I have volunteered for service in the present world conflict. However, with so many square miles of barren sand hills in the vicinity, which would make an ideal location for such a defense project, it is hard for the people here to understand why they should be called upon to sacrifice upon the altar of Mars a community that has grown into a tradition, and that should be as dear to generations yet unborn as it has been to the seven generations that have already come under its spell. Surely it is not necessary to send lumberjacks into this modern Forest of Arden.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Malpractice. Expert testimony condemning the treatment administered as improper is sufficient to take the case to the jury irrespective of any influences that may be drawn from the other evidence.

This is a suit brought in behalf of the infant plaintiff to recover damages for a personal injury, alleged to have been caused by the negligence and malpractice of the defendant, a practicing physician, while the infant was under his care as a patient.

The evidence tended to show that the plaintiff at the time of the injury was 12 years of age, and that she sustained a simple fracture of both bones of the right leg, caused by a log of timber falling upon it. Shortly after the injury she was carried to the defendant's hospital, and there placed under his care. An x-ray picture was taken, a cast was applied on each side of the fracture, and an extension apparatus was attached. Beginning immediately after the application of the extension apparatus, the child suffered a great deal of pain. Her leg became swollen, the toes and heel turned black, and her foot became cold. The extension was removed, and the space between the two casts was completely encased from the knee to the ankle. After a period of about twenty-four hours the physician split the cast a little way from the top. The pain, however, continued where the cast was split. After another twenty-four hours the cast was completely removed, but at that time a gangrenous condition had set in, resulting in permanent injury. The plaintiff introduced an expert witness who testified from the examination of the scar below the plaintiff's knee, and the condition of her leg and foot immediately before trial, to the effect that the gangrenous condition with which the plaintiff suffered was the result of interruption of the circulation of blood; that the scar indicated that sufficient pressure had been placed on the plaintiff's leg to interfere with the circulation; and that when the foot of the patient turned black after the cast had been placed on the leg, the accepted treatment was to have immediately removed the cast altogether, or at least to have loosened the cast.

At the conclusion of all the evidence, the defendant moved for judgment as of nonsuit, which was allowed. The plaintiff appealed from this order.

When this case was considered before the Supreme Court, this tribunal felt that it was unnecessary to go into any phase of the case except the propriety of the judgment of nonsuit which was rendered by the Superior Court. The court did not think it necessary to extend the record by recounting the defendant's evidence, although this evidence, they felt, was not absolutely free from inferences favorable to the plaintiff.

It is not always necessary to have expert medical testimony in order to have a suit sustained for malpractice, inasmuch as the doctrine of *res ipsa loquitur* (the thing itself speaks) may apply. However, in most instances, in the absence of expert medical evidence, the tendency of the lower courts is to nonsuit cases of this kind. It was the opinion of the Supreme Court in this particular instance that because of the condemnatory testimony of one physician it was error for the lower court to have rendered a judgment as of nonsuit, this despite the favorable evidence given for the defendant by five leading doctors.

This case suggests to the profession the advisability of careful study before expressing an opinion, especially where there is any likelihood of litigation. However, if there is obvious negligence, a physician called in, as was the doctor who appeared for the plaintiff above, would naturally be expected to tell the whole truth, in order that justice might be done. (North Carolina Supreme Court, v. 216 p. 653. Decision rendered spring term, 1940.)

MILITARY MEDICINE

The following is a list of the doctors from North Carolina who have been commissioned in the armed services since May 1, 1942.

Name	Rank	Branch
Aycock, Edwin B.	1 Lt.	Army
Anderson, Elbert C.	1 Lt.	Army
Andes, Thomas E.	1 Lt.	Army
Baxley, Raiford D.	1 Lt.	Army
Breeden, William H.	1 Lt.	Army
Byerly, James H.	Capt.	Army
Boney, Elwood R.	Capt.	Army
Ballard, Thomas F.	Capt.	Army
Bandy, William H.	1 Lt.	Army
Bacon, Harold L.	1 Lt.	Army
Burwell, John C.	Capt.	Army
Barefoot, William F.	1 Lt.	Army
Bunn, Richard W.	1 Lt.	Army
Bennett, Van Boring	1 Lt.	Army
Brunson, Edward P.	Major	Army
Barber, John F.		USNR
Brownlee, Robert E.	Capt.	Army
Cekada, Emil B.	Major	Army
Cromartie, William James	1 Lt.	Army
Cox, Samuel C.	Capt.	Army
Carlyle, John B.	Capt.	Army
Corwin, Warren C.	Capt.	Army
Cozart, Benjamin F.	Capt.	Army
Carrington, Samuel M.	Capt.	Army
Chandler, Weldon P.	1 Lt.	Army
Daniel, Louis S.	1 Lt.	Army
Dorsett, Fletcher I.	1 Lt.	Army
Dyer, Sydney G.	1 Lt.	Army
Deaton, Paul M.		USNR
Edmundson, Frank, Jr.	1 Lt.	Army
Elfman, Saumel L.	1 Lt.	Army
Elliott, Julian C.	Capt.	Army
Eckbert, William F.	1 Lt.	Army
Fisher, Ernest W.	1 Lt.	Army
Fales, Robert M.	Capt.	Army
Felton, Robert L.	Capt.	Army
Floyd, Anderson G.	1 Lt.	Army
Fritz, William A.	1 Lt.	Army
Falls, Fred	Capt.	Army
Forth, Paul T.	1 Lt.	Army
Fox, Herbert J.		USNR
Grady, Franklin McL.	1 Lt.	Army
Graham, Charles P.		USNR
Greene, James V.	1 Lt.	Army
Gatling, Robert R.		USNR
Harding, Benjamin H.	1 Lt.	Army
Haar, Frederick B.	Capt.	Army
Hickman, Harry S.	1 Lt.	Army
Hill, Abel LeC.	1 Lt.	Army
Hartman, Bernhard H.	Capt.	Army
Harmon, Raymon H.	Capt.	Army
Helms, Jefferson B.	Capt.	Army
Harden, Boyd	Capt.	Army
Holladay, Lewis W.	Capt.	Army
Jones, T. T.	Capt.	Army
Jervey, William St. J.	1 Lt.	Army
Johnson, Gaston F.	1 Lt.	Army

Jamison, Euell C.	Capt.	Army	Ward, Walter E.	1 Lt.	Army
Jones, Roderick O.	1 Lt.	Army	Willis, Candler A.	1 Lt.	Army
Knoefel, Arthur E.	1 Lt.	Army	Williams, John D., Jr.	Capt.	Army
Killian, Frank McC.	Capt.	Army	Wolfe, Ralph V.	Capt.	Army
Lassiter, Will H.	1 Lt.	Army	Wright, Richard B., Jr.	1 Lt.	Army
Lanier, Verne C.	1 Lt.	Army	Wilson, Walter H.	1 Lt.	Army
Lapsley, Alberti F.	1 Lt.	Army	Williams, Samuel H.	1 Lt.	Army
Lawson, George W.	1 Lt.	Army	Westmoreland, J. R.		USNR
Lacley, Walter J.	1 Lt.	Army	Willard, S. B.	1 Lt.	Army
Large, Hiram L., Jr.	1 Lt.	Army			
McNeill, James H.		USNR			
McDonald, Robert L.	1 Lt.	Army			
McDonald, Lester B.	Capt.	Army			
McCracken, Marvin H.	Capt.	Army			
McGrath, Frank B.	1 Lt.	Army			
McKee, John S., Jr.	Capt.	Army			
Matthews, Brunson B.	Capt.	Army			
Moorefield, Robert H.	Capt.	Army			
Morris, T. A., Jr.	Lt. (jg)	USNR			
Mauzy, Charles H.	Capt.	Army			
Markham, Blackwell	Capt.	Army			
Moore, Roy H.	Capt.	Army			
Mitchell, Landis P., Jr.	1 Lt.	Army			
Myers, Hollan T.	Capt.	Army			
Moore, Ernest V.	Capt.	Army			
Newland, Charles L.	Capt.	Army			
Naumoff, Phillip	1 Lt.	Army			
Owen, Duncan Shaw	1 Lt.	Army			
Oliver, James A.	1 Lt.	Army			
Pittman, William A.	Capt.	Army			
Pope, Samuel A.	1 Lt.	Army			
Patterson, Rez D.	Capt.	Army			
Propst, James H.	1 Lt.	Army			
Pearson, Arthur A.	1 Lt.	Army			
Parrott, John A.		USNR			
Pate, A. H.		USNR			
Peacock, Roy M.		USNR			
Price, Homer H.	1 Lt.	Army			
Poole, M. B.	Capt.	Army			
Powell, Herman S.	1 Lt.	Army			
Powers, John S.	1 Lt.	Army			
Parrette, Richard G.	1 Lt.	Army			
Phelps, John M.	1 Lt.	Army			
Plyler, Ralph J.	Capt.	Army			
Query, Luke W., Jr.	1 Lt.	Army			
Robertson, John N.	Capt.	Army			
Ruffin, Jennings B.	1 Lt.	Army			
Royster, James D.	1 Lt.	Army			
Rudd, Paul D.	Capt.	Army			
Register, John F.	Capt.	Army			
Russell, William M.		USNR			
Rollins, Vance B.	Capt.	Army			
Rubin, Adrian S.	1 Lt.	Army			
Shelburne, Palmer A.	Capt.	Army			
Sullivan, Daniel J.	Capt.	Army			
Sader, Julius	Capt.	Army			
Smith, Rand C.	Capt.	Army			
Sykes, Joy V.	Capt.	Army			
Stelling, Richard N.	Capt.	Army			
Straughan, John W.	Capt.	Army			
Stroupe, Albertus U.	Capt.	Army			
Smith, Roy M.	Capt.	Army			
Traywick, Joseph B.	1 Lt.	Army			
Taylor, Andrew D.	1 Lt.	Army			
Tart, Braston I., Jr.	1 Lt.	Army			
Thompson, William N.	1 Lt.	Army			
Tice, Walter T.	Capt.	Army			
Tyson, Thomas D., Jr.	Capt.	Army			
Tyndall, Robert G.	Capt.	Army			
Thornhill, E. H.	Capt.	Army			
Turrentine, K. P.		USNR			
Upchurch, Thaddeus G.	1 Lt.	Army			
Warwick, Hight C.	Capt.	Army			
Waters, George E.	Capt.	Army			
Whicker, Max E.	1 Lt.	Army			
Wilson, Stephen G.	Capt.	Army			

CIVILIAN DEFENSE TRAINING IN THE MEDICAL ASPECTS OF CHEMICAL WAR GASES

A three day course of training in the medical aspects of chemical war gases was given on July 24, 25 and 26, at the School of Medicine, University of Cincinnati. This course was given under the supervision of Dr. W. L. Mould, Gas Officer of the Medical Division, Office of Civilian Defense, Washington, D. C., and with the collaboration of the staff of the Cincinnati School of Medicine. Approximately forty representatives of the Eastern, Southern and Middle Western medical schools were in attendance. Those who attended were given instruction in the modern treatment of gas casualties, decontamination and protection against gas, and are expected to offer similar courses in their medical schools and ultimately to the medical profession in their communities.

This school was attended by Dr. George T. Harrell of the Bowman Gray School of Medicine, Wake Forest College and Drs. James Hendrix and Haywood M. Taylor of the Duke University School of Medicine. Plans are under way to give a course of approximately six hours in this subject in each of the ten medical districts of the state. Announcements and schedules will be made as soon as they are definitely settled by Dr. S. D. Craig, Deputy State Chief, Emergency Medical Service, Raleigh.

OFFICE OF CIVILIAN DEFENSE

CONSERVATION OF DEALERS' STOCKS OF MEDICAL AND SURGICAL SUPPLIES

The medical profession and the hospitals of the nation will shortly be obliged to depend upon dealers' stocks of medical and hospital supplies if they are to maintain their present level of efficiency. The continued shortage of raw materials makes it increasingly evident that even the armed forces may have difficulty in securing their requirements. Stocks on the shelves of the dealers of this nation constitute the only reserve of medical and hospital equipment which may be available in the near future to meet civilian needs. The hoarding and dead storage of equipment and supplies for a possible emergency should, therefore be discouraged. Any unexpected emergency could be met by our present civilian medical and hospital resources: continued disaster could only be met by the utilization of military stores which would be made available if there were urgent need.

Any surplus or obsolete equipment now in the possession of physicians and hospitals ought not to be dispersed at this time, because of the difficulty of replacement and the possibility that it may be needed for the establishment of emergency base hospitals.

MODIFIED RULING FOR APPROVAL OF THE HOSPITALS USED FOR TRAINING NURSES' AIDES

To date, 32,000 women have enrolled for Volunteer Nurses' Aides training of which 19,000 have satisfactorily completed the course. With but few exceptions these nurses' aides have received their training in hospitals on approved lists of the American Medical Association and the American College of Surgeons. The results in quality of service have been satisfactory to both the hospitals and the Red Cross Chapters conducting this project. We expect these institutions to continue to cooperate in the training of nurses' aides and urge them to make every effort to increase the numbers. But this will not solve the total problem.

In communities in target areas where there are no hospitals or an insufficient number of hospitals on the above-mentioned approved lists, exceptions may be made. To determine which hospitals may be approved for training nurses' aides, immediate steps should be taken to arrange for conferences in each state with the State Hospital Association, the State Board of Nurse Examiners, the State Chief of Emergency Medical Service and his Nurse Deputy, and a Nursing Consultant from the Area Office of the American Red Cross for the purpose of reviewing the entire hospital situation in the state.

As a result of this conference, a list should be drawn up classifying hospitals in each State for the training of nurses' aides, in two groups:

A. Hospitals approved by the American College of Surgeons and registered with the American Medical Association; and

B. Hospitals not registered as above but which in the opinion of representatives of the various State agencies should be approved for training nurses' aides in view of the present war emergency.

With such a list each Red Cross Area Office will be in a position to act immediately when a request for starting a Nurses' Aide Corps is received and also to know where more promotion work for enrollment of nurses' aides is needed.

If the State group mentioned above is unable to agree that a certain hospital should be included in Group B, it should be submitted to the Area Red Cross Nursing Service and to the Regional Medical Officer for their joint decision.

The quality of the nursing care and the ability of the nursing staff to supervise the aides adequately should be the deciding factor in granting exceptions.

HOW TO PROTECT YOURSELF AGAINST GAS

The following information on war gases is supplied for general publication because of the possibility that they may at some time be used by the enemy. If people will remember a few simple facts, they will have no unreasonable fear of this agent.

I. War gases stay close to the ground, for they are heavier than air. To get out of a gassed area, simply walk against the wind or go upstairs.

II. Gas is irritating and annoying to the eyes, nose, lungs, or to the skin, but it is usually harmless if you do not become panicky but promptly leave the gas area and cleanse yourself. A soldier must put on a mask where it is necessary to remain in the contaminated area, but a civilian can go up on the second or third floor and literally ignore it if the windows are kept closed.

III. If the gas should get on your skin, you can prevent it from doing much harm by sponging it off as quickly as possible with a piece of clothing, such as a handkerchief, and applying some neutralizing substance, followed by a thorough bath, preferably a shower, with common laundry soap and water.

IV. If you are indoors, stay there with doors and windows closed, and go up to the second or third story. Stay out of basements. Turn off the air conditioning, and stop up fireplaces and any other large openings.

V. Some gases are spread as oily droplets which blister and burn the skin and eyes. If you are outside when gas is used do not look up. Tear off a piece of clothing or use a handkerchief to blot any drops or liquid from your skin and throw the contaminated cloth away. Blot; do not rub, as rubbing will spread the liquid. Then go home, if it is nearby, or to the nearest place where you can wash immediately with soap and water and cleanse yourself in the following manner:

1. Remove all outer clothing outside the house, since gas can be transmitted to others from contaminated clothing. Put it preferably in a covered garbage pail.
2. Apply one of the following effective household remedies to the part of your skin that has been contaminated; Chlorox or similar household bleach (for mustard); peroxide of hydrogen (for Lewisite); paste or solution of baking soda if you have no peroxide or bleach. If you do not know the gas, use both peroxide and bleach. Keep bleach and peroxide out of the eyes. Do not waste time looking for these remedies; bathe immediately if they are not at hand.
3. After entering the house, wash the bleach or peroxide from hands with laundry soap and water and then wash the face. Remove the underclothing, place it in a covered garbage pail, and enter the bathroom.
4. Irrigate the eyes with large amounts of lukewarm 2 per cent solution of baking soda (one tablespoonful to a quart of water), or else with plain water. Use an ordinary irrigating douche bag or an eye irrigator. If you do not have these, let plain warm water pour into the eyes from the shower, washing them thoroughly. Do not press or rub the eyes.
5. Lastly, take a shower, using soap and hot water.
6. If the nose and throat feel irritated, wash them out also with baking soda solution.
7. If your chest feels heavy and oppressed, if you have any trouble breathing, or if cigarette smoke becomes distasteful, lie down and stay perfectly still until a doctor sees you.
8. If blisters develop, be careful not to break them and call a doctor.

Remember:

Soldiers require gas masks because they must remain in the contaminated area. Civilians can get out of the gassed area or get above the level of the gas, where they do not need gas masks or protective clothing.

Injured persons, who are gassed, require decontamination before they can be admitted to hospitals. All other civilians can best prevent any serious injury by promptly helping themselves in the manner outlined, using a kitchen or bathroom, laundry soap and water, and a few materials found in every household.

STATE OFFICE OF CIVILIAN DEFENSE

Raleigh's blood bank, built up under the direction of Dr. Alex Webb, Jr., Emergency Medical Chief, was put to use in saving the lives of four Army airmen badly injured in the crash of a bomber. Thirty pints of plasma were used.

**SPECIAL ORDINANCE ADOPTED BY STATE
HIGHWAY AND PUBLIC WORKS
COMMISSION AUG. 7, 1942**

Be it ordained that all those sections of public highways within 10 miles distance of the shore line of the Atlantic Ocean, where "Save Our Ships" signs have been erected, be and they are hereby closed to motor vehicular traffic between the hours of 30 minutes after sunset and 30 minutes before sunrise each night, except such motor vehicles operate at a speed not in excess of 15 miles per hour and comply with the following lighting regulations, to wit:

Use only outside standard parking lights; that is, parking lights separate and apart from regular headlights, consisting of bulbs customarily used for parking purposes only, provided, however, that those vehicles not equipped with standard parking lights such as above referred to may use their regular headlights covered with black cloth, black paint or other substance which completely prevents the shining through of any light except for a small segment below the center and as closely to the bottom of the lens as possible, such segment to consist of a vertical slit one inch long and one-half inch wide, and said headlights to be equipped only with such bulbs as are ordinarily and customarily used in said lights. Nothing in this ordinance shall apply to the usual and customarily red rear or tail light.

The signs to be erected designating the outer boundary of the restricted areas shall contain substantially the following wording: "SAVE OUR SHIPS, Night Driving Restricted, MAX. SPEED, 15 M.P.H., USE PARKING LIGHTS ONLY, By Order U. S. Army & S. H. & P. W. C."

This ordinance shall continue pending the present emergency due to the operation of enemy submarines along the coast or until canceled or modified by order of the Commission.

Any person violating this ordinance shall be guilty of a misdemeanor as provided by Consolidated Statutes 3846 (j).

It is well to remember that during one year tuberculosis among the veterans of the World War cost the United States government more than 46 million dollars, exclusive of the cost of hospitalization. One-third of the total amount paid out for compensation to the services was for tuberculosis and 61,330 veterans were in hospitals at government expense. In this day of pensions and augmented government health services, every known scientific procedure should be used to cut down this enormous burden on the taxpayer. Tuberculosis can be detected by the use of the x-ray. The experience of twenty odd years ago need not be repeated.

The prognosis of pleurisy with effusion with negative, doubtful or extremely slight pulmonary findings, by x-ray is excellent if patients receive at least four months of sanatorium care; in fact, it is almost as good as the normal population in the same age group. Francis B. Trudeau, M.D., Amer. Rev. of Tuber., Jan. 1939.

BULLETIN BOARD

PRESIDENT'S MESSAGE

A NEW OPPORTUNITY AND RESPONSIBILITY

The Committee appointed by Governor Broughton to study the care of the mentally sick in our State Hospital at Morganton has made its report. All of its recommendations are excellent. It is earnestly hoped that they will be carried out.

The personnel of the Committee probably could not have been improved upon. In its sound and wise recommendations dealing with the better care and treatment of the mentally sick by an adequate attendant and professional staff, adequately paid, is readily seen the good judgment and advice of its medical member, Dr. Wingate Johnson.

Aside from these good and constructive recommendations, however, the report should be of inestimable value in focusing the attention of the people of North Carolina on our mentally sick. Even if all the recommendations are carried out, the greatest good may yet come from stimulating all of us to a renewed appreciation of our responsibility in the care of the helpless insane.

In its study the Committee found much of which we can not be proud. That North Carolina, which prides itself on the amount of Federal Income Tax it pays, should find itself forty-fifth among the forty-eight states in the amount it spends for the care and treatment of the mentally ill is shocking. While every citizen is desirous of strict economy in the operation of our various institutions, we never wish to be "penny wise and pound foolish." Especially is this true in caring for those who have no say-so in caring for themselves. If, indeed, better and more scientific treatment would result, as is believed, and more patients would be restored to their former self-supporting place in society, then the contemplated additional expenditure would be an excellent investment for us and for our state.

To separate definitely the supervision of the physical plant from the actual care of the patients should certainly make for better treatment. Especially will this be true if the physician in charge is an experienced and qualified psychiatrist, and if he is assisted by an adequate staff, adequately paid.

While all of the recommendations of the Committee are constructive and should meet

with universal approval, there are certain ones in which organized medicine in our state should be especially interested and in which we should find a definite responsibility and opportunity for greater service.

The creation of a Central Board to supervise all state-supported mental hospitals is of paramount importance. Such a board should not only make for a more wisely economic administration, but also should make possible more efficient care and treatment.

In North Carolina organized medicine has no authority and no official responsibility concerning our mentally sick. Governor Broughton appears to be in agreement with the recommendations of his Investigating Committee. It seems likely that he will request our Legislature to increase its appropriation sufficiently to carry out the needed changes, and also to grant him authority to appoint a Central Board, of approximately fifteen members, to govern our state mental institutions. Organized medicine in North Carolina should support our Governor in this request. We should let him know that we are willing and anxious to assume our share of the responsibility in caring for the mentally sick. The Chairman of our Committee on Mental Hygiene, Dr. William Allan, has already suggested to Governor Broughton that if such a Central Control Board is appointed, "a certain number of these men be physicians and that the State Medical Society be asked to elect them (as is done with our State Board of Health)." This is an excellent idea.

We would do well to let it be known to those who will represent us at the next Legislature that we favor the recommendations of the Investigating Committee and that we invite the Governor to use our services.

DONNELL B. COBB, M. D.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. Lucy Morgan, of the U. S. Public Health Service, has been assigned to the state of North Carolina for the duration to carry on public health education work. She is cooperating with the School of Public Health, and extensive additions are being made to the work offered in health education.

* * *

Dr. A. Watts Makepeace, Dr. George K. Anderson, and Professor Margaret Blee, of the Faculty of the School of Public Health, attended the Southern Pediatrics Seminar at Saluda, N. C., from July 20 to August 1, 1942.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Official figures for the first six months of our participation in the war disclose that there have been 9 more births than occurred during the first half of last year, and 1,949 fewer deaths.

It is especially gratifying to note the decrease in deaths among babies under a year old. The total through June, this year, was 2,263, which is 414 fewer than occurred during the corresponding period of 1941—meaning that the lives of 414 North Carolina babies have been saved this year, despite war-time conditions.

Deaths from whooping cough, which is one of the greatest contributing factors to infant mortality—and which now is preventable—numbered only 72 the first half of 1942, compared with 117 during the first half of 1941.

The maternal death rate this year has shown a gratifying decrease. So far this year there have been only 160 deaths as the result of pregnancy, as compared with 201 the first six months of 1941—a decrease of 41, or about 20 per cent.

There has also been a downward trend in deaths resulting from what the State Board of Health terms preventable accidents. Last year's figures were extremely discouraging, but during the first half of 1942 there were only 790 such deaths, as compared with 864 during the corresponding period last year—a decrease of 74.

Typhoid fever deaths dropped during the period referred to from 11 to 6; diphtheria deaths from 29 to 12.

The number of suicides dropped from 158 to 116, and homicides from 175 to 139.

There were only 2 deaths from poliomyelitis—or infantile paralysis—reported through June this year, while last year, during the corresponding period, there were 6.

The war on tuberculosis continues with apparent success. During the first half of 1942 tuberculosis in all forms killed 835 persons in North Carolina, while for the same period last year the toll was 908.

Deaths from pellagra, a disease attributed to malnutrition, totaled 70 in North Carolina through June, this year. This was a decrease of 11 under the corresponding period last year.

* * *

Protection against flies in rural districts involves more than keeping these insects out of the kitchen, dining room and other portions of a residence.

Here are some facts well worth taking into consideration in any planned anti-fly campaign:

1. Flies will lay their eggs in fresh manure and all manure in the stable must be considered fly-infected when put into the bin.

2. After growing as maggots for five or six days, they will, if possible, burrow into the earth to mature and pupate—and here is where untreated manure furnishes flies after it has been spread on land.

3. When the new fly first breaks its pupa (shell) and emerges, it is able to crawl to light and air and fly off.

Fly eggs hatch as minute maggots in about 24 hours. The maggots grow to full size in about six days—this is the time to kill flies by the thousands. To do this, poison the manure with borax or paris green. The process of killing flies with swatters after they have taken to the wing is a slow process compared with poisoning the manure before they emerge.

If, however, it is not desired to spread the manure right away, there is a very practical and inexpensive method whereby the maggots can be

killed. Prepare a concrete pit, a foot deep—or it might be of watertight wood construction, but concrete is best because it is permanent—fill the pit with water, on the surface of which pour enough oil to prevent the breeding of mosquitoes. Then build a frame, across which place strips of wood heavy enough to hold the manure. Place this frame about 12 inches over the pit; deposit the manure there and as it dries out, the maggots, seeking moisture, will burrow deeper. Finally, they will reach the bottom of the manure pile, fall into the liquid and drown. The manure then may be spread on land without giving rise to an Egyptian plague. The dimensions of this simple outfit vary, according to the amount of manure to be dried out.

* * * *

In North Carolina, the occupational disease law provides that the industrial commission shall adjudicate the law and shall make investigations of health hazards in certain industries where a silicosis and asbestosis hazard exists. In these industries, preemployment and periodic examinations are required by law. The industrial commission has designated the North Carolina State Board of Health as its agent, and all investigations and physical examinations are conducted either by the State Department of Health, or under its supervision. Furthermore, the director of the industrial hygiene division of the State Department of Health of North Carolina is also the chairman of the medical board of the industrial commission. This close relationship between the two agencies most concerned with industrial hygiene activities in North Carolina has resulted in an excellent program of control of health hazards in industry.

NINTH DISTRICT MEDICAL SOCIETY

At a meeting of officers of the Ninth District Medical Society it was decided to abandon the annual meeting in Lenoir. This was thought necessary because of the national emergency and the scarcity of doctors.

BUNCOMBE COUNTY MEDICAL SOCIETY

Dr. Tinsley R. Harrison, Professor of Medicine at the Bowman Gray School of Medicine of Wake Forest College, was guest speaker at the August meeting of the Buncombe County Medical Society, held on August 17. His subject was "The Treatment of Congestive Heart Failure".

CONTRIBUTIONS TO THE MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

Eight hundred twenty-eight dollars were contributed to the Medical and Surgical Relief Committee by the Woman's Auxiliary to the North Carolina State Medical Association. Dr. Marjorie E. Reed, Chairman of Women's Activities announced.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC.

A check for \$1,500.00 was mailed recently to the Marquette University School of Medicine, Milwaukee, Wisconsin, to carry on research work in the fight against infantile paralysis, according to an announcement made by Basil O'Connor, president of the National Foundation for Infantile Paralysis, Inc.

The purpose of the grant is to study the relationship of nutrition to the morphology and physiology of the neuromuscular apparatus in skeletal muscle.

CLINICAL CONFERENCE AT FORT BRAGG

James Watson, M.D.

Doctors contemplating a visit to the Medical Service at Fort Bragg might advisedly plan to be there on a Friday and sit in on the weekly clinical conference at Station Hospital No. 2. Under the brilliant leadership of Major Worth B. Daniels the doctors of this Station Hospital, often joined by members of the staffs of Station Hospitals 1 and 3 hold a clinical conference which is quite lively and of high order. These doctors of necessity are, or are learning to be, specialists in military medicine for the time being, but they use these clinical conferences to keep "on their toes" in relation to their profession as a whole.

On August 14 cases of Addison's disease, aortartia, and pernicious anemia were presented, the patients being young soldiers from the hospital wards. In addition to presenting the case and pointing out the salient points demonstrated in the patient, each doctor in charge gave a concise but quite comprehensive review of historical data relative to the disease, of the newer and more valuable laboratory tests and diagnostic criteria, of treatment, and of the most significant points raised in the literature in the last five years.

The review of the literature on Addison's disease was particularly timely because of the large amount of work done on this subject in recent years. Coarctation of the aorta, one gathered, is not nearly so rare as most of us think. One captain whose practice had been in North Carolina remarked that he had picked up 7 cases by noticing the notches in the ribs (caused by collateral circulation) when examining x-rays of the chest for other reasons. The old questions as to reversibility or irreversibility of the neurological findings in pernicious anemia and as to the cause for neurological findings in this type of anemia, when they are not found in other types often more profound, were discussed from a quite up-to-date approach.

AMERICAN BOARD OF OPHTHALMOLOGY

Because of the War Emergency, the Board announces the following additional examinations:

NEW YORK CITY—December 13 to 15

LOS ANGELES—January 15 and 16

At the last meeting it was decided to cancel the 1943 written examination, to include in the oral examination all of the subjects previously covered by the written examination, and to dispense temporarily with the requirement of case reports. The oral examination will probably require two or three days and will cover the following subjects:

External Diseases—Slit Lamp
Ophthalmoscopy
Histology—Pathology—Bacteriology
Ocular Motility
Refraction—Retinoscopy
Practical Surgery
Anatomy and Embryology
Perimetry
Therapeutics and Operations
Optics and Visual Physiology
Relation of the Eye to General Diseases

Formal application on the proper blanks for the December and January examinations must be filed with the Secretary not later than November 1.

Please write at once for blanks to:

American Board of Ophthalmology
6830 Waterman Avenue
St. Louis, Mo.

CONFERENCE ON VENEREAL DISEASE CONTROL

The conference on Venereal Disease Control Needs in Wartime will be held under the auspices of the U. S. Public Health Service, in conjunction with the Eighth Annual Meeting of the American Neisserian Medical Society, at Hot Springs National Park, Arkansas, October 21 to 24, 1942.

SURGEONS' CONGRESS SCHEDULED FOR CLEVELAND, NOVEMBER 17 TO 20

The 1942 Clinical Congress of the American College of Surgeons, originally scheduled for October to be held in Chicago at the Stevens Hotel (taken over August 1 by the United States Army Air Corps), will be held in Cleveland, with headquarters at the Cleveland Public Auditorium, from November 17 to 20. The twenty-fifth annual Hospital Standardization Conference sponsored by the College will be held simultaneously.

The program has been centered around the many medical and surgical problems arising out of the prosecution of an all-out effort to win the war, emphasizing the needs of the rapidly expanding medical services of the Army and Navy, and consideration of special problems related to the increasing activities for civilian defense.

NEWS NOTES

At the direction of the Procurement and Assignment Service Dr. O. D. Baxter of Charlotte is serving as radiologist in Asheville during the absence of Dr. Donald MacRae and Dr. G. W. Murphy, who have been called into service with the armed forces. Dr. Murphy has resigned as President of the Buncombe County Medical Society.

UNITED FRUIT COMPANY ASSURES VITAL BANANA DIET TO CELIAC SUFFERERS

The United Fruit Company announced that it had made provisions so that all children suffering from celiac, a nutritional disturbance of late infancy and early childhood for which a diet of bananas is the indicated therapy, will receive priority for necessary supply of bananas, despite the present shortage of bananas brought about by the U-boat activity in the Caribbean.

The Company, in response to queries from physicians and anxious mothers, has arranged to give priority on bananas to all celiac cases. In face of the scarcity caused by war conditions and lack of ships, the Company states that so long as there are bananas at all in this country, they will make every effort to see that such patients are supplied.

Anyone who is unable to obtain bananas for celiac sufferers is advised to have their doctor write or telegraph the Fruit Dispatch Company, Pier 3, North River, New York City.

BOOK REVIEWS

Carcinoma and Other Malignant Lesions of the Stomach. By Waltman Walters, B.S., M.D., M.S. in Surgery, D.Sc., F.A.C.S., Surgeon, Mayo Clinic; Howard K. Gray, B.S., M.D., M.S. in Surgery, F.A.C.S., Surgeon, Mayo Clinic; James T. Priestley, B.A., M.D., M.S. in Experimental Surgery, Ph.D. in Surgery, F.A.C.S., Surgeon, Mayo Clinic; and Associates in the Mayo Clinic and Mayo Foundation, Rochester, Minn. 576 pages with 143 illustrations. Philadelphia and London: W. B. Saunders Company, 1942. Price \$8.50.

This monograph is a comprehensive compilation of the present day knowledge on a subject that is of great interest to every physician. It presents some of the best work that has been done on cancer of the stomach, and its authors are able to base their conclusions on a vast experience which unquestionably makes this volume the more valuable. Every phase of the subject is given intelligent consideration and is well correlated to the book as a whole.

Blood Grouping Technic. A Manual for Clinicians, Serologists, Anthropologists and Students of Legal and Military Medicine. By Fritz Schiff, M.D., Late Chief of the Department of Bacteriology, Beth Israel Hospital, New York; and William C. Boyd, Ph.D., Associate Professor of Biochemistry, Boston University School of Medicine; with a foreword by Karl Landsteiner, member, Rockefeller Institute. 248 pages. Price, \$5.00. New York: Interscience Publishers, 1942.

The ever-widening use of blood and plasma transfusions makes the present excellent monograph most timely and welcome. The senior author, whose death occurred recently, was one of the pioneers in the field of investigation of blood groupings. He discovered the relationship between the Forssman antigen and the blood group substance A; the relation of the genes to the presence of group substances in body secretions; the fact that the special agglutino-gen of group O is detectable by animal sera; and other fundamental facts. The junior author has also made notable advances in the field. As might be expected, the present volume is an authoritative and up-to-date work which should be in the hands of every technician, serologist and physician who is required to do blood groupings. It presents all the essential facts on the subject in a clear and succinct manner. Technical details of procedure, as well as theoretical considerations, are given full attention. Details are given for the technique of establishing a blood bank, which is of such great importance in the present times. Special applications of blood grouping techniques, such as determining disputed paternity, and the application of blood group investigations in anthropology are also considered. The book can be recommended without qualification and should be available to every hospital laboratory.

(BOOK REVIEWS CONTINUED ON PAGE 537)

TRANSACTIONS OF THE AUXILIARY

to the Medical Society of the State of North Carolina

TWENTIETH ANNUAL SESSION

Held at Charlotte, North Carolina, May 11-13, 1942

OFFICERS 1941-1942

President.....Mrs. Sidney Smith, Raleigh
 President-Elect.....Mrs. R. A. Moore, Winston-Salem
 First Vice President and Chairman of Organization
 Mrs. Clyde R. Hedrick, Lenoir
 Second Vice President and Chairman of McCain-
 Stevens Beds.....Mrs. J. R. Terry, Lexington
 Third Vice President and Chairman of Student Loan
 Fund.....Mrs. John S. Hooker, Chapel Hill
 Chairman of Past Presidents
 Mrs. P. P. McCain, Sanatorium
 Chairman of Advisory Board
 Dr. Caroline McNairy, Lenoir
 Corresponding Secretary.....Mrs. J. C. Knox, Raleigh
 Recording Secretary.....Mrs. Harry Winkler, Charlotte
 Treasurer.....Mrs. E. C. Judd, Raleigh

CHAIRMEN OF STANDING COMMITTEES

Program.....Mrs. Joseph A. Elliott, Charlotte
 Public Relations
 Mrs. Wingate Johnson, Winston-Salem
 Legislative.....Mrs. J. Buren Sidbury, Wilmington
 Press and Publicity
 Mrs. Verne S. Caviness, Raleigh
 Bulletin.....Mrs. Ben Kendall, Shelby
 Hygeia.....Mrs. W. G. Byerly, Lenoir
 Memorial.....Mrs. George W. Mitchell, Wilson
 Historian.....Mrs. J. Roy Hege, Winston-Salem
 Exhibits.....Mrs. Alfred A. Kent, Jr., Granite Falls
 Research.....Mrs. Rigdon Dees, Greensboro
 Scrapbook.....Mrs. Ben F. Royal, Morehead City
 Jane Todd Crawford Memorial
 Mrs. Frederick R. Taylor, High Point
 National Defense.....Mrs. Thomas Leslie Lee, Kinston
 Auditor.....Mrs. R. S. McGeachy, New Bern
 Nominations.....Mrs. George M. Cooper, Raleigh
 Convention.....Mrs. Henry L. Sloan, Charlotte

COUNCILORS

First District.....Mrs. Thomas L. Carter, Gatesville
 Second District.....Mrs. K. B. Pace, Greenville
 Third District.....Mrs. D. M. Royal, Salemburg
 Fourth District.....Mrs. C. F. Strosnider, Goldsboro
 Fifth District.....Mrs. William T. Rainey, Fayetteville
 Sixth District.....Mrs. P. G. Fox, Raleigh
 Seventh District.....Mrs. G. Aubrey Hawes, Charlotte
 Eighth District
 Mrs. Edward T. Harrison, High Point
 Ninth District.....Mrs. James W. Vernon, Morganton
 Tenth District
 Mrs. D. I. Campbell King, Hendersonville
 North Carolina Councillor to Southern Medical
 Auxiliary.....Mrs. James Buren Sidbury, Wilmington

NOMINATING COMMITTEE

Mrs. George M. Cooper, Raleigh, Chairman
 Sixth District
 Mrs. Julian Moore, Asheville.....Tenth District
 Mrs. Rigdon Dees, Greensboro.....Eighth District
 Mrs. J. B. Sidbury, Wilmington.....Fourth District
 Mrs. P. P. McCain, Sanatorium.....Fifth District

PAST PRESIDENTS

1923 (Organizing Chairman)
 Mrs. P. P. McCain, Sanatorium
 1924.....Mrs. P. P. McCain, Sanatorium
 1925.....Mrs. I. W. Faison, Charlotte
 1926.....Mrs. J. Howell Way, Waynesville
 1927.....Mrs. R. S. McGeachy, Kinston
 1928.....Mrs. B. J. Lawrence, Raleigh
 1929.....Mrs. A. B. Holmes, Fairmont
 1930.....Mrs. J. H. Macon, Warrenton
 1931.....Mrs. W. B. Murphy, Snow Hill
 1932.....Mrs. R. S. McGeachy, Greenville
 1933.....Mrs. W. P. Knight, Greensboro
 1934.....Mrs. J. W. Huston, Asheville
 1935.....Mrs. J. Buren Sidbury, Wilmington
 1936.....Mrs. C. P. Eldridge, Raleigh
 1937.....Mrs. J. R. Terry, Lexington
 1938.....Mrs. W. T. Rainey, Fayetteville
 1939.....Mrs. Joseph A. Elliott, Charlotte
 1940.....Mrs. C. F. Strosnider, Goldsboro
 1941.....Mrs. Clyde Hedrick, Lenoir
 1942.....Mrs. Sidney Smith, Raleigh

CONVENTION PROGRAM

Ladies' Entertainment Committee

Mrs. Henry Sloan, Chm. Mrs. Harry Winkler
 Mrs. Joseph A. Elliott Mrs. W. B. Mayer
 Mrs. Graham Reid Mrs. A. A. Barron
 Mrs. Raymond Thompson Mrs. Alonzo Myers
 Mrs. Ed. J. Wannamaker Mrs. Hamilton McKay

MONDAY, MAY 11

1:00 P. M.—Luncheon for the Executive Board
 Members (Chinese Room)
 Hostess—Mrs. Sidney Smith, President
 3:00 P. M.—Meeting of the Executive Board—
 (Chinese Room)
 8:00 P. M.—Bridge—(Ball Room—Hotel Charlotte)

TUESDAY, MAY 12

10:00 A. M.—State Auxiliary Meeting—Charlotte
 Woman's Club
 1:00 P. M.—Luncheon—Fashion Show by Mon-
 taldo's
 3:00 P. M.—Drive to Private Gardens
 5:00 P. M.—Tea—Mrs. E. J. Wannamaker
 7:00 P. M.—Banquet—President's Reception

WEDNESDAY, MAY 13

9:00 A. M.—Board Meeting—Pine Room
 10:00 A. M.—Visit to Mint Museum
 11:00 A. M.—Coffee Hour—Mrs. Joseph A. Elliott

PRECONVENTION MEETING OF THE EXECUTIVE BOARD AND DIRECTORS

Minutes

The Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina held its pre-convention meeting in the Chinese Room of the Hotel Charlotte, Charlotte, North Carolina, on Monday, May 11, 1942.

Mrs. Sidney Smith, President, Raleigh, was hostess to the Board at luncheon, served at one-thirty.

A business session followed the luncheon. The invocation, given by Mrs. George W. Mitchell, Wilson, was followed by greetings from the President. The roll call showed twenty-nine members present.

The President called for reports. A motion was made by Mrs. Verne Caviness, Raleigh, that detailed reports be given by officers, standing committees and councilors. Mrs. Joseph A. Elliott seconded the motion, and it was carried.

Convention announcements were made by Mrs. Henry L. Sloan, Charlotte, general chairman of the Convention Committee.

Reports of the officers were first on the agenda.

Mrs. P. P. McCain, Chairman of Past Presidents, Sanatorium, thanked our hostess for the delightful luncheon. She urged that we extend the membership of our Board by electing new members, rather than re-appointing the members who have served. In this way the work of the Auxiliary would be more widespread throughout the state. She asked the President to send Mrs. J. R. Knight a letter of condolence for the death of Dr. Knight. The corresponding secretary, Mrs. J. C. Knox, Raleigh, was instructed to write the note.

Mrs. R. A. Moore, president-elect, Winston-Salem, told of her year spent in preparation before assuming her responsibilities and pledged to give her best efforts.

Mrs. E. C. Judd, treasurer, Raleigh, read her report, which included the Auditor's report. It was moved and seconded that the report be accepted as read. The motion was carried. The reports of Mrs. J. R. Terry, Lexington, second vice-president, and chairman of McCain-Stevens Bed, and of Mrs. John S. Hooker, Chapel Hill, third vice-president, chairman of the Student Loan Fund, were incorporated in the treasurer's report.

Mrs. J. B. Sidbury, Wilmington, made a motion that telegrams of congratulations on the occasion of graduation be sent to Charles Whittington of Snow Hill, State College, and Charles Highsmith, George Washington University, who were recipients of Auxiliary loans. This motion was seconded by Mrs. R. S. McGeachy, New Bern, and carried.

Motion was made by Mrs. McCain that a representative of the Auxiliary should go before the House of Delegates of the Medical Society of the State of North Carolina, which is the parent organization, each year to carry a report of the year's work of the Auxiliary. This was seconded by Mrs. C. F. Strosnider, Goldsboro, and approved. After some discussion the president appointed Mrs. McCain and Mrs. E. C. Judd to carry the message this year. A motion was made by Mrs. Sidbury, seconded by Mrs. Terry, and carried that in the future the presiding officer carry this message.

The recording secretary, Mrs. Harry Winkler, Charlotte, announced that the minutes of the Fall Board meeting had been sent to the board members. She read a communication from Dr. Caroline McNairy, Lenoir, Advisory Board Chairman.

The corresponding secretary, Mrs. Knox, read the duties she had performed.

The first vice-president, chairman of organization, Mrs. Clyde R. Hedrick, read her report.

The reports of the councilors followed. Six councilors were present, four absent, as follows:

First District—Mrs. Thomas L. Carter, Gatesville

Second District—Mrs. K. B. Pace, Greenville

Third District—Mrs. D. M. Royal, Salemburg

Fourth District—Mrs. C. F. Strosnider, Goldsboro

Fifth District—

Mrs. William T. Rainey, Fayetteville, absent

Sixth District—Mrs. P. G. Fox, Raleigh

Seventh District—

Mrs. G. Aubrey Hawes, Charlotte, absent

Eighth District—Mrs. E. T. Harrison, High Point

Ninth District—Mrs. James W. Vernon, Morganton

Tenth District—

Mrs. D. I. C. King, Hendersonville, absent

The following standing committee reports were submitted:

Program—Mrs. Joseph A. Elliott, Charlotte

Public Relations—

Mrs. Wingate Johnson, Winston-Salem

Legislative—Mrs. J. Buren Sidbury, Wilmington

Press and Publicity—

Mrs. Verne S. Caviness, Raleigh

Bulletin—Mrs. Ben Kendall, Shelby

Hygeia—Mrs. W. G. Byerly, Lenoir

Memorial—Mrs. George W. Mitchell, Wilson

Historian—Mrs. J. Roy Hege, Winston-Salem

Exhibits—Mrs. Alfred A. Kent, Granite Falls

Research—Mrs. Rigdon Dees, Greensboro

Scrapbook—Mrs. Ben F. Royal, Morehead City

Auditor—Mrs. R. S. McGeachy, New Bern

Convention—Mrs. Henry L. Sloan, Charlotte

Nominations—Mrs. George M. Cooper, Raleigh

National Defense—Mrs. Thomas L. Lee, Kinston

Jane Todd Crawford Memorial—

Mrs. Frederick R. Taylor, High Point

Mrs. Lee was absent but submitted her report. The president suggested that a telegram be sent to Mrs. Lee expressing regret at her absence, and giving her a vote of thanks for her outstanding work. The members agreed and the corresponding secretary was instructed to send the message.

The Revisions Committee Chairman, Mrs. Sidbury, recommended the following changes in the Constitution:

Article IV—Section 1, shall read "four vice presidents" instead of three.

Article V—Add section 5 to read: "The third vice president shall come from the western part of the state and shall serve as chairman of the Stevens Bed at the Black Mountain Sanatorium."

Section 6 shall read: "The fourth vice president shall be chairman of the Auxiliary Loan Fund."

Mrs. Harrison moved that the Board recommend to the general meeting that the changes suggested by the Revisions Committee be approved as read. The motion was seconded by Mrs. Wingate Johnson.

Mrs. George Cooper, Chairman of the Nominating Committee, read her report.

It was moved by Mrs. McCain, seconded by Mrs. Pace, and carried that the Fall meeting be held at Sanatorium, and that the Spring Board meeting be dispensed with for the duration.

The President called for the report of the Councilor from the Southern Medical Association, Mrs. Sidbury.

Under new business, Mrs. R. A. Moore asked if defense workers could be allowed membership in the Auxiliary, if they are working on defense projects sponsored by the Auxiliary. Discussion followed, and it was decided to abide by the By-Laws and have only wives and widows as members, but leave it to the incoming Board to decide upon a form of cooperation.

The meeting was declared adjourned at five-thirty.

Respectfully submitted,

MRS. HARRY WINKLER,
Recording Secretary

Greetings From The President Mrs. Sidney Smith

I am sure we are all glad to be meeting here in Charlotte and appreciate all that has been done for our convenience and pleasure by Charlotte doctors' wives. Yet, truthfully, I must confess I am sorry I was denied the pleasure of entertaining you in Raleigh in my own home this Spring.

All of us from Raleigh on the Board had looked forward to your visit for a year and it was a disappointment to me, and to all of us, that it was necessary to cancel this meeting. The war has brought many sacrifices, and for me this was one of them. But the tire situation was so acute, the bus schedules from various parts of the state so conflicting, and our own Board members so involved in the rush of war work that it was obvious that the only way of holding a profitable Board meeting was to combine it with our State Meeting and thereby eliminate one extra trip and one extra meeting.

I thank you for your year of service to the Auxiliary and for your cheerful cooperation at all times. You have been lovely to work with, and a loyal and interested group. It has been a happy year for me, though a busy one, and here in the midst of our own family I wish to acknowledge the assistance, the advice and counsel I have received from our most experienced Board members. We have not had one president this year, but several, all rolled into one, and I have leaned heavily upon Mrs. Sidbury and Mrs. McCain.

I wish to thank the councilors and chairmen of standing committees for the faithfulness with which you have pursued your duties. While some of the work which has been done this year may seem to have borne small results compared with what we had hoped to accomplish, I am sure that this activity will be reflected in the progress of the Auxiliary for years to come. The Auxiliary has been strengthened in North Carolina, thanks to all of you on the Board.

Report of President-Elect

This has been a year of preparation. I should like first to acknowledge personally the patient cooperation of our president in answering many questions—some verbal and many by correspondence. The foundation which she has laid this year will be of invaluable help to me in the year to come.

I have read *The Bulletin*, *The Journal of the American Medical Association*, *"The Handbook for Auxiliaries," Hygeia*, and the transactions of the State Auxiliary from its foundation, and I have tried to become thoroughly familiar with the State Auxiliary By-Laws. (I have bought a book of Robert's Rules of Order and am slowly digesting it.)

I have written fifty-seven letters and have attended all board meetings. In the last month, I have been conferring with officers, councilors, and state committee chairmen in regard to our work for the coming year. I hope within the next month to have our slate complete.

This will be a year of service and sacrifice for all. With your cooperation and indulgence I shall endeavor to give my best efforts to our Auxiliary, and I know that we shall find joy in working together. In these critical times when our doctors shall be called upon to assume additional responsibilities, we as doctors' wives shall endeavor to make our auxiliary all that the name implies—an aid to them in every way that is possible.

Respectfully submitted,
MRS. R. A. MOORE

REPORTS OF COMMITTEE CHAIRMEN

Report of Program Chairman

In the November issue of the North Carolina Medical Journal, there was published a "Recommended 1941-1942 Program for County Auxiliaries", which included suggestions from the National Chairman, our president, the State Department of Health, the secretary of the State Medical Society, and the A. M. A. Bureau of Health Education. At this time, also, a list of one hundred speakers from the State Medical Society and a list of available material for county auxiliary programs were given.

Copies of the above mentioned article were sent to county program chairmen.

Twelve of the organized counties secured program chairmen—and two had their presidents serve as program chairmen. Thirteen answers to questionnaires were received. Eight requests for program material were received and supplied. An indefinite number of speakers were chosen from the published list.

At more than half of the forty-eight county meetings held, planned programs were given.

Your Program Chairman asks that it be "noised abroad" that there is Auxiliary news in the North Carolina Medical Journal! One County Chairman writes: "Our organization has grown in numbers and interest during the past year, but I do feel that had I known at the beginning of the year what was expected of us, and had I known of the suggestions in the Journal, we could and would have had a more definite objective in our program planning and would not have spent so much time groping around for ideas."

Wake County is, as far as I know, our one Auxiliary with a Year Book. Let us hope that many other Year Books will be in evidence during the coming year.

Respectfully submitted,
MRS. JOSEPH A. ELLIOTT

Report of Public Relations Chairman

The objectives of the Public Relations Committee this year have been:

1. Acquainting the public with the means of acquiring authentic information on health.
2. Interpreting the attitude of the Medical Society toward health questions, as they arise.
3. Furnishing speakers for lay groups on Socialized Medicine and related subjects.
4. Emphasizing nutrition.
5. Forming health committees in lay groups.
6. Cooperating in all defense work.
7. Featuring a good speaker on some phase of medicine as often as possible at Auxiliary meetings.
8. Informing members of the Auxiliary on medical legislation.

One article was written for the North Carolina Medical Journal. Letters have been written to the councilors of the ten districts, to the presidents of the fourteen auxiliaries, to the eight Public Relations Chairmen that have been appointed in answer to persistent pleading, and the Post Convention issue of the Bulletin was sent to these chairmen.

A report on the year's work was sent to the National Chairman. One letter has been received from our Public Relations Chairmen. Her report was encouraging enough to make amends for the ones that failed to arrive. I am hoping that something has been accomplished by each of the eight Public Relations Chairmen and that next year there will be a Public Relations Committee in every Auxiliary—but hope deferred maketh the heart sick.

Respectfully submitted,
MRS. WINGATE M. JOHNSON

Report of Legislative Chairman

The Legislature of North Carolina meets biennially, and 1941 was not a legislative year. For this reason there was no legislative activity in the Auxiliary to the Medical Society of North Carolina. The Auxiliary acts in legislative matters only at the request of the State Society.

As chairman of the legislative committee, I have had two communications from the National chairman.

Respectfully submitted,
MRS. J. BUREN SIDBURY

Report of Chairman of Press and Publicity

Our Auxiliary has received publicity in eight major North Carolina newspapers during our season of activity. News stories have appeared in Asheville, Charlotte, Winston-Salem, Greensboro, Durham, Raleigh, Goldsboro and Wilmington. Four feature stories have been released to the press. The first reported the fall meeting of the Executive Board with Mrs. P. P. McCain at Sanatorium, and outlined the program of work for the year. This release also described the accomplishments of the Auxiliary for the year and was accompanied by a layout of pictures of the officers of the Auxiliary. The second was released at the request of Mrs. Leslie Lee, of Kinston, Chairman of National Defense, to precede the "Mercy Emblem" Drive by this Committee. This feature was released to the eight major newspapers, and was carried by the United Press and the Associated Press. The third release, issued on May 3, announced the program of the Annual State Meeting. A fourth release, on May 10, was a resume of the program and was accompanied by a picture of Mrs. R. A. Moore, the incoming president, and Mrs. Sidney Smith, retiring president.

In addition to publicity through the newspapers, items concerning the activities of the individual auxiliaries have been prepared and submitted to the National Chairman of Press and Publicity for publication in the *Journal of the American Medical Association*. These items have also been forwarded to the *North Carolina Medical Journal*.

Each month during our season of activity an article by a Chairman of a Standing Committee has been submitted to the *North Carolina Medical Journal*, and these have been published almost in their entirety. The following have contributed articles:

Mrs. Sidney Smith.....President
Mrs. P. P. McCain.....Chairman of Past Presidents
Mrs. Joseph Elliott.....Program Chairman
Mrs. J. R. Terry—

Chairman, McCain-Stevens Bed Fund
Mrs. John S. Hooker—

Chairman, Student Loan Fund
Mrs. Wingate Johnson—

Chairman, Public Relations
Mrs. W. G. Byerly.....Chairman, Hygeia

Mrs. Henry Sloan.....Chairman, Convention

Mrs. Thomas Leslie Lee—
Chairman, National Defense

Mrs. Verne S. Caviness—
Chairman, Press and Publicity

Of the eleven organized counties in December ten appointed Press and Publicity Chairmen, and next year we hope to have the other seven counties have Press and Publicity Chairmen.

We have also made two reports to the National Chairman of Press and Publicity regarding the progress of this Committee in this state.

Respectfully submitted,
MRS. VERNE S. CAVINESS

Report of Bulletin Chairman

As circulation chairman for the *Bulletin*, I have secured forty subscriptions, which is an increase of 50 per cent over the total number of subscriptions secured last year.

I have written around five hundred cards to Auxiliary members asking them to subscribe to the *Bulletin*. I am convinced that we need more sub-chairmen to make the necessary personal contacts.

Respectfully submitted,
MRS. BEN KENDALL

Report of Chairman of Hygeia

I mailed a copy of the History and Duties of the Hygeia Chairman to each Executive Board member.

At the request of the Chairman of Press and Publicity, Mrs. Verne S. Caviness, I wrote an article for the *North Carolina Medical Journal*.

I have written 116 letters and cards to various state officers, county officers and doctors' wives over the state in an effort to obtain Hygeia workers and subscriptions. There have been times of discouragement, but some few have been very cooperative and to those few, my sincere thanks.

I am fairly bursting with pride at Caldwell County's total of fifteen subscriptions.

The total number of Hygeia subscriptions from the entire state for the year May 1, 1941, to April 30, 1942, is thirty-two. The Auxiliary's commission from these subscriptions is \$40.20. This money is applied to the McCain Endowment Fund.

Respectfully submitted,
MRS. W. G. BYERLY

Report of Exhibit Chairman

During my term as Exhibit Chairman, I have cooperated with our National Exhibit Chairman in prompt answering of all correspondence.

This year's exhibit is a poster, which will be shown at our State Meeting, after which it will be forwarded to the American Medical Association Convention in Atlantic City, representing the Auxiliary to the Medical Society of the State of North Carolina at the convention in June.

Respectfully submitted,
MRS. ALFRED A. KENT, Jr.

Report of Historian

As Historian I have recorded in the archives of the Auxiliary a summary of the 1941 Transactions, giving the officers, Boards, Committees, Councilors, program, the Minutes of the Board and Auxiliary meetings, and a copy of the President's Report.

A copy of 1941's record was mailed to the National Historian of the Woman's Auxiliary.

County Histories on hand have been filed.

I have completed a chronological chart from the proceedings of the Auxiliary from the time of its organization in 1923 up to date. This chart is similar to the one used by the State Medical Society. It sets forth in charted form a complete, concise review of the Auxiliary's history showing the year, date, place of meeting, president, number of auxiliaries, membership and the outstanding accomplishments in each year.

Respectfully submitted,
MRS. ROY HEGE

HISTORY OF AUXILIARY

Date	Place of Meeting	President	Auxiliaries	Membership	Outstanding Events
1923.....	Asheville	Mrs. P. P. McCain..... Organizing Chairman		53.....	Constitution and By-Laws Adopted Named "Woman's Auxiliary to the Medical Society of the State of North Carolina"
1924.....	Raleigh	Mrs. P. P. McCain.....			Mrs. T. W. Bickett Speaker— "Mothers Aid Work in North Car- olina" Dues Set at \$1.00 per year Social side of Auxiliary Stressed.
1925.....	Pinehurst	Mrs. J. W. Faison..... Charlotte			
1926.....	Wrightsville	Mrs. J. Howell Way..... Beach Asheville			
1927.....	Durham	Mrs. R. S. McGeachy..... Kinston	10 or .. 12		
1928.....	Pinehurst	Mrs. B. J. Lawrence..... Raleigh	14.....		Auxiliary to maintain a bed at State Sanatorium
1929.....	Greensboro	Mrs. A. B. Holmes..... Fairmont	23.....		Constitution revised. Mrs. Allen Bunce, Pres. Southern Auxiliary, spoke on "Student Loan"
1930.....	Pinehurst	Mrs. J. H. Macon..... Warrenton	25		
1931.....	Durham	Mrs. W. B. Murphy..... Snow Hill	23	344	Dr. Fishbein addressed Auxiliary \$642 had been raised toward a \$10,- 000 Student Loan Fund.
1932.....	Winston-Salem	Mrs. R. S. McGeachy..... Greenville	32.....	347	\$759.85 in Student Loan Fund Constitution revised
1933.....	Raleigh	Mrs. W. P. Knight..... Greensboro			Mrs. Walter Jackson Freeman, Pres. of Auxiliary to the A.M.A., speaker. Mrs. J. D. Keiger appointed His- torian
1934.....	Pinehurst	Mrs. J. W. Huston..... Asheville	16.....	238	Speakers: Mrs. James Blake, Na- tional President Mrs. Southgate Leigh, President Southern Auxiliary
1935.....	Pinehurst	Mrs. J. Buren Sidbury..... Wilmington		235	Bed at Sanatorium named "McCain Bed" for our organizing presi- dent, Mrs. P. P. McCain \$800.00 in Student Loan Fund Endowment Fund started for bed
1936.....	Asheville	Mrs. C. P. Eldridge..... Raleigh			Name changed to "Auxiliary to the Medical Society of the State of North Carolina"
1937.....	Winston-Salem	Mrs. J. R. Terry..... Lexington			Dr. J. S. Jonson, former patient of bed, refunded \$350.00 to fund
1938.....	Pinehurst	Mrs. W. T. Rainey..... Fayetteville			Auxiliary voted a life-time mem- bership to Mrs. P. P. McCain
1939.....	Bermuda	Mrs. J. A. Elliott..... Charlotte			
1940.....	Pinehurst	Mrs. C. F. Strosnider..... Goldsboro	15.....	605	Supported bill before legislature requiring examination for mar- riage license Auxiliary voted to maintain a bed at the Western North Carolina Sanatorium
1941.....	Pinehurst	Mrs. C. R. Hedrick..... Lenoir	11.....	465	Bed at Western Sanatorium named "Martin L. Stevens Bed"

Report of Research Chairman

As Chairman of Research it has been my duty to review transactions of the past year in the field of medical progress, and particularly of health and nutrition.

I have read health journals and papers written by doctors recognized as authorities in that field. I have also attended several lectures, two of which were outstanding in my opinion—one by Dr. and Mrs. E. W. Groves of the Marriage Relation Clinic at Chapel Hill on the subject of comprehensive pre-

marital examination of applicants, thereby assuring a greater percentage of happy and lasting marriages. The other was a lecture by Dr. C. J. Bar-borka, Assistant Professor of Medicine of North-western University, on "Prevention of Disease by Proper Diet". This lecture was to laymen and to physicians, and both were given before the Guil-ford County Medical Society in Greensboro.

The major and more important duty of this com-mittee was to study the life and achievement of some doctor in particular. I have prepared a paper

on the life of Dr. Carlos Curtis Hudson, who was a pioneer in North Carolina Public Health Work.

Respectfully submitted,
MRS. RIGDON O. DEES

**Report of Chairman of Jane Todd Crawford
Memorial Fund**

Your Jane Todd Crawford Memorial Chairman has answered all inquiries, kept in touch with the Southern Medical Auxiliary chairman, and carried out her suggestion to use the Mite Box Collection system by placing the box on the registrar's table so that everyone may have an opportunity to make a contribution. With the permission of the Executive Board, there will be a free will offering taken in the State Meeting Tuesday morning. From this collection \$5.00 will be sent to the Jane Todd Crawford Memorial Fund, and all remaining funds will be added to our Student Loan Fund. December 13 has been designated as Jane Todd Crawford Day, because it commemorates the first visit of Dr. McDowell to his now famous patient.

Respectfully submitted,
MRS. F. R. TAYLOR

Report of Scrapbook Chairman

Without undue solicitation a vast amount of interesting material concerning the activities of state and county units was clipped from magazines and sent to me. May I take this opportunity to express my sincere gratitude to all who thus contributed to the joy of life for me and to the valuable volume which is your Scrapbook. My real report is the Scrapbook itself, and I wish to urge that you take the time to examine its contents. It will give you a working knowledge of the worthwhile work of our Auxiliary during the past years, and with that knowledge, an appreciation for the privilege of being a contributing member.

Respectfully submitted,
MRS. BEN F. ROYAL

Report of National Defense Chairman

As National Defense Chairman of the Auxiliary to the North Carolina State Medical Society I wish to submit the following report.

At the Fall Board Meeting I recommended that the Auxiliary sponsor classes in First-Aid and Nutrition; and that we aid the Medical and Surgical Relief Committee of America in collecting medical supplies and surgical instruments to fill requests that were fast coming in from the war-torn areas abroad.

I soon realized we could not accomplish much alone in sponsoring First-Aid and Nutrition classes, but could work with the Red Cross and other organizations who were doing defense work along these and other lines. Since November we have concentrated our efforts on aiding the Relief Committee. However, reports from our county auxiliaries show that our members, as individuals or as members of other organizations, have done outstanding work in attending first-aid classes, serving as instructors of Home Nursing classes, entertaining service men in the defense areas, buying war bonds, having Victory Gardens, aiding the C.D.V.O., and many other defense projects.

I shall report in detail only what we have done, by counties, to aid the Medical and Surgical Relief Committee. In November we launched a drive to sell "Mercy Emblems" in all organized counties to raise money to buy supplies and instruments not donated, that were urgently needed by the committee, to fill the requests from overseas.

	Pins sold	Money cleared	Contributions
Wake	283	\$226.40	\$.20
Sampson	24	19.20	
Guilford	62	49.60	
Craven	22	17.60	
Hoke	128	102.40	
New Hanover	33	26.40	
Lenoir	346	276.80	12.72
	898	\$718.40	\$12.92

Of our first \$240.80 cleared \$200 was used to purchase an operating kit to be sent to Britain, and \$40.80 was placed towards the purchase of a first-aid kit. Since Pearl Harbor all money has been used to buy Medical Field Sets to equip hospitals and field stations in America. These sets cost \$120.00 each. The committee has donated four sets already to North Carolina with the name plate on each inscribed:

EMERGENCY MEDICAL FIELD SET
donated by
THE AUXILIARY TO THE MEDICAL SOCIETY
of the
STATE OF NORTH CAROLINA
to the
MEDICAL AND SURGICAL RELIEF COMMITTEE
420 Lexington Avenue, New York, New York
for
AID TO AMERICA

These sets were sent to Emergency Medical Service chiefs in Durham, New Bern, Wilmington, and Morehead City. One other set will be presented, I understand from the Committee in New York, at the State Medical Meeting.

We have sent medical supplies to this committee as follows:

3 cases of instruments donated by Dr. Isaac H. Manning, Chapel Hill, valued at \$15.00.

2 packages and 1 carton donated by Forsyth County Auxiliary, valued at \$13.00.

Guilford County has one "tin" with silver contributions to be sent to headquarters. We have not learned just how much the contents amount to. It will be opened at headquarters and a receipt mailed to us for the contents.

Since I will not be at the state meeting, may I say here that I have enjoyed this year's work immensely. I want to thank the ladies who have given me their support. I could have done nothing alone. Especially do I wish to thank Mrs. Spiers and the other ladies of Charlotte who have so graciously volunteered to distribute the literature and take charge of selling our "Mercy Emblems" at this meeting.

Respectfully submitted,
MRS. THOMAS LESLIE LEE

**GENERAL SESSION
Tuesday, May 12, 1942
Minutes**

The twentieth annual convention of the Auxiliary to the Medical Society of the State of North Carolina was called to order at the Charlotte Woman's Club, Charlotte, N. C., on Tuesday morning, May 12, at 10:30, by the president, Mrs. Sidney Smith of Raleigh. Present were twenty-eight Board members and seventy-eight delegates and Auxiliary members.

Mrs. George W. Mitchell of Wilson pronounced the invocation and the members sang "The Star Spangled Banner", accompanied by Mrs. Wingate

Johnson at the piano. Mrs. Mitchell conducted the annual memorial service, paying tribute to the late Mrs. J. W. McGee of Raleigh and Mrs. D. A. Stanton of High Point. A moment of silent prayer followed.

The president extended greetings, then read her annual report. She thanked the officers and members for their helpfulness and cooperation.

Dr. F. Webb Griffith of Asheville, President of the Medical Society of the State of North Carolina, brought greetings on behalf of the doctors.

The president introduced Mrs. Clyde R. Hedrick, first vice-president and State chairman of organization. Mrs. Hedrick introduced the district councilors and the county auxiliary presidents. Six councilors and seven county presidents were in attendance.

This was followed by the reports of Mrs. J. R. Terry, second vice president and chairman of McCain-Stevens Beds, and Mrs. John S. Hooker, third vice president and chairman of Student Loan Fund.

Mrs. E. C. Judd, treasurer, read her report, which carried with it the auditor's report. It was moved, seconded and carried that the report be accepted with acknowledgement of Mrs. Judd's faithful efficiency.

The treasurer made announcement of the prize awards for the year as follows:

- (1) Mrs. P. P. McCain's prize of \$5.00 went to Hoke County for the largest contribution to the McCain Endowment Fund. The amount was \$79.00. Mrs. McCain accepted for Hoke, but expressed the desire that the prize should go to the next highest, since Hoke's contribution was the amount left over from the entertainment fund of the State meeting for the previous year and technically belonged to the whole Auxiliary. She presented the prize to Mrs. Graham Barefoot of Wilmington, president of the New Hanover-Pender-Brunswick Auxiliary, which made the next highest contribution to the Fund. Mrs. Barefoot accepted with thanks and turned the check over to the McCain Endowment Fund.
- (2) Mrs. Sidney Smith's prize of \$5.00 to the County Auxiliary paying all membership dues first went to Hoke County. This award was also presented to the Endowment Fund.
- (3) Mrs. J. S. Hooker's prize of \$5.00 went to Guilford County for the largest contribution to the Student Loan Fund.

Mrs. McCain, the chairman of past presidents and our honorary Auxiliary president, reported that seven former state presidents were in attendance at the meeting.

The chairman of the Advisory Board of the State Medical Society, Dr. Caroline McNairy, was unable to attend and sent a letter of regret and good wishes.

A recommendation from the Board of Directors was read by the recording secretary, Mrs. Winkler, as follows: "The Board of Directors wishes to recommend the continued support of the Medical and Surgical Relief Committee of America in the sale of Mercy Emblems for the purchase of medical and surgical equipment for the United States and her Allies."

The secretary moved the adoption of the recommendation. The motion was seconded by Mrs. Vernon and carried.

The Jane Todd Crawford Memorial chairman, Mrs. Frederick Taylor, stated that a mite box would be placed in the convention room for contributions to this Fund. A collection was taken at the meeting, and \$25.38 was received. Five dollars of this amount was given to the Jane Todd Crawford Memorial and the remainder, \$20.38, was directed to the Student Loan Fund.

Mrs. R. S. McGeachy moved the purchase of a new set of books for the treasurer's records. The motion was seconded and carried.

The chairmen of all standing committees were introduced to the members.

Mrs. J. B. Sidbury, North Carolina Councilor to the Southern Medical Auxiliary, reported she had been unable to attend the Southern Medical Association meeting, but made her annual report urging continued support of Southern Medical Association projects.

As chairman of revisions, Mrs. Sidbury also read the proposed revisions to the State By-Laws. Mrs. McCain moved that all be adopted with the exception of Section V, Article IV, which provided that a member must serve on the Board of Directors one year before being eligible for nomination as president-elect. Mrs. Strosnider seconded the motion and it was carried.

Mrs. D. M. Royal of Salemburg, chairman of the courtesy committee, read her report, thanking individuals and firms in Charlotte for their contribution to the successful State Convention. She moved adoption of her report and the motion was carried.

The president appointed Mrs. J. B. Sidbury, Mrs. E. C. Judd and Mrs. J. W. Vernon as a committee to approve the Minutes.

The following delegates were elected to attend the National Auxiliary Convention, June 6-11 in Atlantic City, N. J.: Mrs. R. A. Moore, Winston-Salem; Mrs. C. F. McRae, Durham; Mrs. Wingate Johnson, Winton-Salem; Mrs. Verne S. Caviness, Raleigh.

The following alternates were elected: Mrs. R. L. McMillan, Winston-Salem (president's alternate); Mrs. Ben Kendall, Shelby; Mrs. Roy Hege, Winston-Salem; Mrs. W. T. Rainey, Fayetteville.

Mrs. George M. Cooper of Raleigh, chairman of the nominating committee, presented her report. The president asked for nominations from the floor. There were no further nominations, and the slate was unanimously adopted as follows:

- President—Mrs. R. A. Moore, Winston-Salem
- President-Elect—Mrs. K. B. Pace, Greenville
- First Vice President—Mrs. Sidney Smith, Raleigh
- Second Vice President—Mrs. Charles Gay, Charlotte
- Third Vice President—Mrs. J. L. Reeves, Canton
- Fourth Vice President—Mrs. A. H. Elliott, Wilmington
- Treasurer—Mrs. E. C. Judd, Raleigh
- Recording Secretary—Mrs. James W. Vernon, Morganton
- Corresponding Secretary—Mrs. R. L. McMillan, Winston-Salem

Mrs. P. P. McCain installed the new officers. The retiring president, Mrs. Sidney Smith, presented the gavel to the incoming president, Mrs. R. A. Moore, who then made her inaugural address.

Mrs. Henry L. Sloan, convention chairman, made announcement of the entertainment that was to follow.

The annual meeting of the Auxiliary adjourned, to meet in Raleigh in May, 1942.

Respectfully submitted,
MRS. HARRY WINKLER,
Recording Secretary

Memorial Service
Mrs. George W. Mitchell, Chairman
Memorial Committee

Invocation:
Send, we beseech Thee, Almighty God, Thy Holy Spirit into our hearts, that He may direct and rule us according to Thy will, comfort us in all our

afflictions, defend us from all error, and lead us into all truth; through Jesus Christ our Lord, who with Thee and the same Holy Spirit liveth and reigneth, one God, world without end. Amen.

"The Lord gave and the Lord hath taken away. Blessed be the name of the Lord."

During the past year God took from our midst in October, 1941, Mrs. J. W. McGee of Raleigh, and in April, 1942, Mrs. D. A. Stanton of High Point.

"It was the voice of Jesus calling. His loving hands stretched out to draw them near. I am the Resurrection and the life, saith the Lord. He that believeth in me shall never die."

"And now Lord, what is my hope; truly my hope is ever in thee. I know that my Redeemer liveth. I heard a voice from heaven saying unto me. From henceforth blessed are the dead who died in the Lord, even so saith the spirit; for they rest from their labors."

Let us pray:

"O Lord Jesus Christ, who by Thy death didst take away the sting of death; grant unto us Thy servants so to follow in faith where Thou hast led the way, that we may at length fall asleep peacefully in Thee and awake after Thy likeness, through Jesus Christ our Lord. Amen."

"Now the laborer's task is o'er;
Now the battle day is past;
Now upon the farther shore
Lands the voyager at last.
Father in Thy gracious keeping
Leave we now Thy servant sleeping."

Report of the President

We are delighted to be meeting in Charlotte on this twentieth anniversary of the organization of the Auxiliary to the Medical Society of the State of North Carolina. We are glad, too, to have this opportunity to salute the recently reorganized Mecklenburg County Medical Auxiliary.

We expected great things of the Mecklenburg Auxiliary, and you have more than lived up to our expectations. You have had a successful year of activity under the leadership of your president, Mrs. Raymond Thompson, and I am sure I speak for all present in expressing appreciation for the program of entertainment you have arranged for us during our visit here. I do want to thank Mrs. Henry L. Sloan, who has ably served as our State Convention Chairman, and all the ladies on her various committees. We are all aware of the great amount of time and thought these programs demand and we are grateful to the doctors' wives in Charlotte for making this meeting possible in such a pleasant manner.

For the benefit of any newcomers to our group and because it is well for all of us to be reminded, I wish to cite the objectives of your Medical Auxiliary and beg you to dwell on each of these:

- To interpret the aims of the medical profession to other organizations interested in the promotion of health education;
- To assist in entertainment at the meetings of the State Medical Society;
- To promote friendliness among the families of the medical profession; and
- To do such other work as may be approved from time to time by the Advisory Committee of the State Medical Society.

This last objective has led us into a vast educational program among the wives of doctors in North Carolina. Through your membership in the State Auxiliary you are affiliated with the National Auxiliary, which is directed by no lesser group than the American Medical Association. They seek to

educate us on matters pertaining to medical legislation, to teach us how to build good-will for the profession, to educate us concerning preventive medicine, to stimulate our interest in the public health, and to keep us informed on the scientific advances of modern medicine.

The American Medical Association has recognized in the Auxiliary a powerful influence for the good of the profession and has bestowed upon us some significant responsibilities, chiefly through our legislative program in which we urge the study of socialized medicine as opposed to the ideals of organized medicine; also, through our public relations department, wherein we as members of many lay organizations such as women's clubs, parent-teacher associations, the garden clubs, the American Association of University Women, the League of Women Voters and other civic and cultural organizations interested in the promotion of health education, may be a source of correct information on health. In this it is our responsibility to affiliate ourselves with the health work of the various organizations to which we belong and to be instrumental in having authorized speakers from the medical profession address these groups.

In this broad program of legislation and public relations we are affiliated with more than 27,000 women—wives of doctors throughout the United States. Thirty-nine states and the District of Columbia have state auxiliaries; two other states will join the ranks this year, and requests for information on the organization of auxiliaries have come from Hawaii and the Canal Zone.

Here in North Carolina our work embraces both the national program and a very splendid state program dedicated to the welfare of members of the profession. I wish to submit the following report of activities of the Auxiliary in North Carolina for the year 1941-42.

Your president has travelled 2,277 miles in the interest of the Auxiliary. These trips included visits to:

The Fifth District Auxiliary in Fayetteville in October

The Seventh District Auxiliary in Gastonia in November

The Sampson County Auxiliary in Samburg in November

The Guilford County Auxiliary in Greensboro in December

The Wayne County Auxiliary in Goldsboro in January

The Craven County Auxiliary in New Bern in February

The Forsyth County Auxiliary in Winston-Salem in March

The Rockingham County Auxiliary in Leaksville in March

The Duplin County Auxiliary in Wallace in March

The Halifax County Auxiliary in Halifax in April

This is a total of eight counties and two districts visited, four of the county meetings being organization meetings. Invitations to two other counties were regrettably declined because of conflicting engagements. These invitations came from Mecklenburg and New Hanover-Pender-Brunswick. The president visited only those counties to which she was invited, and in each instance spoke in behalf of the Auxiliary, discussing its projects and objectives. The president has also attended two meetings of the State Board of Directors.

There are now seventeen organized county auxiliaries in North Carolina, an increase of six for the year. Nineteen counties are included in this total, three counties being jointly organized. In an effort to increase the number of organized auxiliaries with-

in the state this year, and thereby broaden the scope of the Auxiliary's effectiveness, the councilors of the ten medical districts, under direction of the State organization chairman, Mrs. Clyde R. Hedrick of Lenoir, wrote letters to the presidents of all county medical societies in the state having no organized auxiliaries and requested their endorsement.

The councilors wrote 48 letters to county presidents;

Number of auxiliaries authorized was 22;

Number of auxiliaries organized was 6;

The organized auxiliaries in North Carolina to date are as follows:

Caldwell
Craven
Duplin
Forsyth
Gaston
Guilford
Halifax
Hoke
Mecklenburg
New Hanover-Brunswick-Pender
Person
Pitt
Robeson
Rockingham
Sampson
Wake
Wayne

There are three District Auxiliaries—Fifth, Seventh and Ninth. The total number of members of county auxiliaries are 491.

Total number of members-at-large 227.

Total membership of State Auxiliary 718.

Of the seventeen organized counties, thirteen sent in annual reports indicating that forty-six county auxiliary meetings were held during the year. The State Board has met twice. The ten councilors have done excellent liaison work between the counties and the State organization, cooperating with all officers and committee chairmen.

The second vice president and State Chairman of McCain-Stevens Beds, Mrs. J. R. Terry of Lexington, reports that from May, 1941, to May, 1942, the McCain Bed was occupied successively by one doctor and two nurses and the Stevens Bed by one doctor and one nurse. Many of the county auxiliaries sent cards and gifts during the holiday seasons and magazines were also sent the patients of the two beds. The McCain Bed Endowment Fund has grown from \$2,024.51 on May 20, 1941, to \$2,338.81, on May 12, 1942. Total contributions to the Endowment Fund this year are \$266.81. The chairman issued appeals for the Fund to all county presidents.

The Student Loan Fund has been administered by the third vice president and State Loan Fund chairman, Mrs. John S. Hooker of Chapel Hill. Two loans were granted last Fall, one to Charles Highsmith of Dunn, who graduated in mechanical engineering from the North Carolina State College during the past week, the other to Charles Whittington of Snow Hill, who is graduating in medicine from George Washington University this June.

Mrs. Hooker issued a letter to each county auxiliary president, appealing for funds for the Loan Fund this Spring. Total contributions to the Fund this year are \$60.78.

The State Program chairman, Mrs. Joseph A. Elliott of Charlotte, went to work early on material and speakers and had a well-rounded annual program outlined for publication in the October issue of the North Carolina Medical Journal. She corre-

lated suggestions from the National program chairman, the State Department of Health and the secretary of the State Medical Society. A list of one hundred speakers, doctors from over the entire state, was published with her program so that county program chairmen might have suggestions on doctors who would attend meetings and speak on chosen subjects.

A resume of county activities reveals that of seventeen counties, ten had county program chairmen. Sixteen programs on medical subjects were given during the year, exclusive of business and social programs, and the chosen subjects in the counties included Auxiliary activity on a nation-wide and state-wide scale, socialized medicine, nutrition, civilian defense, Red Cross work, proper lighting to prevent eye strain, county health problems and how the auxiliaries can help, blood plasma and the establishment of blood banks, and preventive medicine with particular emphasis on the control of venereal diseases. Mrs. Elliott has responded to all requests for program material, has attended three county auxiliary meetings and was speaker at one. A hard job, well done!

Mrs. Wingate Johnson of Winston-Salem, State chairman of public relations, has served as the contact agent between the National chairman and the county auxiliaries. The theme for the year's work has been "Health Defense" and the objectives for the year were as follows:

1. Acquainting the public with the means of acquiring authentic information on health.
2. Interpreting the attitude of the Medical Society toward health questions as they arise.
3. Furnishing speakers for lay groups on socialized medicine and related subjects.
4. Emphasizing nutrition.
5. Forming health committees in lay groups.
6. Cooperating in all defense work.
7. Featuring a good speaker on some phase of medicine as often as possible at Auxiliary meetings.
8. Informing members of the Auxiliary on medical legislation.

A canvass of doctors' wives in North Carolina reveals that the following numbers have worked for health defense this year:

Red Cross work including sewing, knitting, surgical dressing, Roll Call and Emergency Drive—200
Studied First-Aid—53
Studied Home-Nursing—21
Studied as Nurses' Aides—6
Air Raid Filter Center—14
Instructors—8
Studied Nutrition—38
Ambulance drivers—4
O. C. D.—40

A National Defense committee was created on the State Board of Directors last fall when the imminence of this country's entrance into war was apparent. Mrs. Thomas Leslie Lee of Kinston was chosen for this important work, which is closely allied with the work of the public relations department inasmuch as this, too, is work for health defense.

The State Auxiliary has cooperated with the Medical and Surgical Relief Committee of America in the sale of Mercy Emblems to buy surgical equipment for the United States and her Allies. The treasurer's report will show the amount of money contributed by the Auxiliary to this cause and the amount of equipment purchased.

Eight counties cooperated in the sale of Emblems. Lenoir County, home of Mrs. Lee, which does not

have a medical auxiliary, also cooperated in a big way by leading off the sale of Emblems with more than \$200.00 in October.

The legislative chairman, Mrs. J. Buren Sidbury of Wilmington, has remained on the alert for any assistance required. The Auxiliary does not act in legislative matters unless so instructed by the State Medical Society, and no requests were made this year.

The press and publicity chairman, Mrs. Verne Caviness of Raleigh, has kept the Auxiliary members over the state informed on activities and policies. She has made good use of the space allotted the Auxiliary in the *North Carolina Medical Journal* and has prepared for publication an article each month of the year, contributed by various officers and chairmen of the State Auxiliary. She has released three news stories to eight major North Carolina newspapers, accompanied by pictures of officers.

The Bulletin chairman, Mrs. Ben Kendall of Shelby, issued cards to 426 members of the Auxiliary last fall, pleading for subscriptions to the *Bulletin*. She requested all organized counties to appoint Bulletin Chairmen, and obtained two. Though she has worked hard and is completely sold on the value of the *Bulletin*, she has been rewarded with only 40 subscriptions. I would say this word in passing—you cannot fully appreciate the scope of the Auxiliary as an aid to the organized medical profession unless you become a regular reader of the *National Bulletin*. Please don't any county auxiliary officer be without it next year, and if all the members cannot subscribe, see that the *Bulletins* are circulated around among the membership so that all may read them and benefit by the information they contain.

Mrs. W. G. Byerly of Lenoir as Hygeia chairman has stressed the importance of this publication of the A. M. A., as an instrument for health education in national defense. The counties do not realize the importance of increasing the circulation of this magazine as a decisive blow to the advocates of socialized medicine. Hygeia gives the public the honest viewpoint on your husband's profession. It is the Bible of preventive medicine, and we must work harder next year to increase its influence. The A. M. A. has assigned this work to us. It gave us as our quota to sell in North Carolina this year 280 subscriptions. We can only report 32. Mrs. Byerly has worked, but she has labored almost alone. Seven counties reported having Hygeia chairmen, but not all were active, as this report shows. This is not a job that can be done single-handed. Let's put North Carolina in the Hygeia contest next year and come out on top!

Mrs. George W. Mitchell of Wilson has been Memorial chairman for the year. She has served as our chaplain, has kept a necrology list among the Auxiliary members, and prepared and conducted the memorial service in tribute to our members who have passed on since we last met.

The State historian, Mrs. J. Roy Hege of Winston-Salem, has kept a faithful record of your Auxiliary for the year 1941-42 and will prepare this in permanent form at the close of this convention.

Through the efforts of Mrs. Alfred A. Kent, Jr., of Granite Falls, you will have an exhibit at the National Auxiliary meeting in Atlantic City in June. This exhibit is a poster portraying the participation of the Auxiliary in health defense. She has

it on display at this meeting and will send it on to Atlantic City when we adjourn. I hope many of you will go with your husbands to the meeting of the American Medical Association. If you do, please attend the sessions of the National Auxiliary and study the exhibits of other states for ideas. Look for your North Carolina exhibit there.

Mrs. Rigdon Dees of Greensboro has served as research chairman for the year and has prepared a paper on the life of Dr. C. C. Hudson of Greensboro. This paper will be sent to the Southern Medical Auxiliary to be filed in their lending library. It then becomes a source of program material to all auxiliaries in the South.

Mrs. Ben Royal of Morehead City has compiled the State Scrapbook for this year. She has kept clippings concerning the Auxiliary activities and has the book on display at this meeting.

We have cooperated with the Southern Medical Auxiliary also by continuing our support of the Jane Todd Crawford Memorial, a fund which is being raised to erect a permanent memorial in Kentucky to the first woman who underwent an ovariectomy. Mrs. Frederick R. Taylor of High Point has been chairman for the year, and we will give her a few moments on this program a little later this morning.

I thank Mrs. R. S. McGeachy of New Bern, our beloved "Aunt Het", for her services as auditor this year, and Mrs. George M. Cooper of Raleigh, for her success in the difficult assignment as chairman of nominations. I would reiterate my thanks to Mrs. Henry L. Sloan of Charlotte, who has spent months in planning to bring this State meeting to its present successful climax. We have enjoyed having her on the Board and we hope she will become a permanent fixture.

I could not close this report without publicly expressing my appreciation to our State treasurer, Mrs. E. C. Judd of Raleigh, for her untiring efforts; to Mrs. J. C. Knox of Raleigh, who so faithfully stood by me to meet the deluge of correspondence, and to Mrs. Harry Winkler of Charlotte, who has done a splendid job as recording secretary. I could not have survived the problems arising during the year without the sympathetic interest and advice of two of our most steadfast members, both past State presidents, Mrs. J. B. Sidbury of Wilmington and Mrs. P. P. McCain of Sanatorium. My right-hand has been our president-elect, Mrs. R. A. Moore, and my rock of strength at all times has been Sidney Smith!

This has been a hard-working Board of Directors. All have regarded their jobs seriously and are an earnest, intelligent and interested group, working for the good of organized medicine in North Carolina and in behalf of improved health conditions throughout the country.

I thank you for the honor and privilege of having served as your State President. It has been an inspiration to me. It has been a joy to know so many of you personally, and I say to you in all sincerity that doctors marry the sweetest, finest women on earth! When your time comes and you are approached to accept this office, I would advise you to do so unhesitatingly, for the experience is broadening and the fellowship more than compensates for the work. I thank you for all the courtesies extended me during the year and wish you continued success and happiness in this our cause—the highest cause of all—to aid our husbands in the alleviation of human suffering.

Respectfully submitted,
MRS. SIDNEY SMITH

Greetings to the Auxiliary

Dr. F. Webb Griffith, President
Medical Society of the State
of North Carolina

First I want to thank you for the privilege of appearing before you today. It is with considerable trepidation that I come, and that may be due to the fact that until I reached manhood and even afterwards, I was told what to do by a doctor's wife, my mother. And again for the past thirty years I have been obedient to the orders of a doctor's wife.

I have addressed the House of Delegates and also the general session of our Medical Society, and I assure you that the audience now before me is far easier on the eyes than either of the other two.

The excellent work that your organization has been doing for the endowment of beds in the sanatoria, for the loan fund, for the purchase of surgical supplies, and in other ways is known to all of us and is most commendable. By all means continue and enlarge those efforts; but you have now a far greater opportunity and responsibility. Not only are we at war but we are in a life and death struggle. Our lives and methods of living are going to be greatly changed for better or worse.

There are approximately 2800 doctors licensed to practice medicine in North Carolina. Before our next annual meeting, probably half of these will be giving their full time to war work of some nature. Those who because of age or disability must remain at home will be doing double duty.

Probably upon no other group of citizens will the demand for active service and sacrifice be as great as upon the medical profession. Why not have your organization invite and even challenge the wife of every doctor of the State Medical Society to join you in forming a strong and united organization to help the doctors carry on the fight? Wouldn't it be fine if by fall you could notify the President of the State Medical Society that you had 1000 members ready and eager to serve? Some of the wives have had training as nurses, and with a short refresher course would be in a position to render invaluable aid in case of disaster. Some could utilize a previous business or secretarial experience and thereby release a man for active duty. The activities of the Red Cross and the Civilian Defense are open to many of you. The care of your children and the management of the home in the absence of the husband will require the full time of many, and there is no greater service than that.

In addition to these activities, every one of you can, and I am sure, will give your full moral and spiritual support to the members of our profession, wherever and however they may be serving.

I know the doctors of North Carolina, and they are not going to fail. Likewise I know many of the wives of the doctors of North Carolina, and they too are going to carry their load and carry it with a smile in spite of the hardships and sorrows which will inevitably come.

After tomorrow I will be merely an ex-President, returned to the ranks, and the descent will be sudden and great. If, however, in that capacity I can serve your organization, I shall be delighted to do so.

Letter from National President

Mrs. Roscoe E. Mosiman
Seattle, Washington

Dear Mrs. Smith:

Will you please convey to your members my very great disappointment in not being able to attend the annual meeting, and tell them personally how much I appreciate their splendid cooperation in all

our Auxiliary endeavors this year. I had every intention to carry out my plans to attend many annual meetings in April and May, but urgent matters in connection with the establishment of the central office necessitated a complete change in my plans.

In addition to the constant and consistent promotion of all defense measures, which is our first duty to our nation during these ominous times, we should make every effort possible to keep our organization strong. This we owe to our parent body. Just as the mother of the family must safeguard the home and maintain a high level of morale while the men of the family are defending the sacred rights of home and nation on the field of battle, so the Woman's Auxiliary must perform a similar service for the men of the profession of medicine who are ministering to those who are wounded in this great struggle to preserve the American way of life. To this end, shall we not pledge our wholehearted effort during the critical days to come?

To you as the president of the Woman's Auxiliary of your state I want to express my deep appreciation for your splendid cooperation and your leadership in the work of health defense.

With best wishes for a successful convention.

Very sincerely yours,

DAISY S. MOSIMAN (Mrs. R. E.)

Message From Chairman of Advisory Board

Dear Mrs. Smith:

I wish to thank you for your invitation to be present at the Board of Directors meeting on Monday, May 11. I am sorry, but I am not planning to be in Charlotte on Monday. I regret very much that I cannot accept your invitation to join you at your luncheon.

Your Auxiliary has done much for the society, and the committee appreciates your continued efforts.

I hope you will have a well attended and interesting meeting.

Sincerely yours,

CAROLINE McNAIRY, M.D.

Report of Organization Chairman

During the year the chairman of organization compiled a statistical chart giving a complete picture of auxiliary organization throughout the entire state. The chart includes District councilors and officers, the number of county auxiliaries, and the officers and committee chairmen of each, number of members of each, number of meetings held, average attendance, number of eligible members, and chief activities of the auxiliaries for the year.

These statistics showed seventeen organized county auxiliaries, an increase of six during the year. The councilors of the ten medical districts wrote letters to the presidents of forty-eight county medical societies having no auxiliaries, requesting endorsement of the auxiliary for each of these societies and asking that county organizers be appointed to form the auxiliaries in the unorganized counties. To the forty-eight letters written, there were twenty-two responses requesting the organization of auxiliaries in their counties and naming organizers. While time permitted the organization of only six of these, this work will be continued during 1942-43. A total of fifteen different county auxiliaries were visited by the councilors during the season.

State organization totals now show seventeen county auxiliaries, embracing nineteen counties, three being jointly organized; three District auxiliaries; a total auxiliary membership of 718, with 491 of these belonging to county auxiliaries, and

227 members-at-large. The organized counties in North Carolina to date are Caldwell, Craven, Duplin, Forsyth, Gaston, Guilford, Hoke, Halifax, Mecklenburg, Person, New Hanover, Brunswick, Pender, Pitt, Robeson, Rockingham, Sampson, Wake and Wayne.

Respectfully submitted,
MRS. CLYDE R. HEDRICK.

Report of First District Councilor

There are only two organized county medical societies in the First District—Bertie, and Pasquotank—Camden—Currituck—Dare, jointly organized. Five other counties in the District have small numbers of doctors but no organization.

In September, 1941, the Councilor wrote letters to the presidents of each of the two organized county societies, asking their endorsement for auxiliaries in their counties and requesting that county organizers be named from among the doctors' wives. One reply was received, from Dr. E. P. Norfleet of Roxobel, heartily endorsing an auxiliary to the Bertie County Medical Society. However, no organizer was secured and this organization could not be completed.

The Councilor wishes to explain that the doctors in this District are widely scattered and efforts at organization of both doctors and their wives are more difficult than in the areas of the state having larger numbers of doctors. While there are no organized auxiliaries in the First District, progress has been made in the endorsement by Bertie County, and it is hoped that the organization of an auxiliary for this group can be effected during the coming year.

Respectfully submitted,
MRS. THOMAS L. CARTER.

Report of Second District Councilor

Number auxiliaries in district—October 1, 1941. 1
Number auxiliaries in district organized 1941-1942 1
Number members in Craven County Auxiliary. 21
Amount sent to State Treasurer from
Craven County \$22.00
Amount sent to Red Fund from Craven
County \$10.00
Number members in Pitt County Auxiliary.... 20
Amount sent to State Treasurer from
Pitt County \$20.00
Total number members in District 42
Amount of money sent from District..... \$52.00

"Doctors' Day" was observed by the Pitt County Auxiliary by placing in the office of each doctor in the county a basket of flowers, and a note, expressing our appreciation of the wonderful work he is doing.

In this newly organized county this gesture alone was worth the effort and work of organizing.

All letters were written as instructed by our President and various chairmen.

Respectfully submitted,
MRS. K. B. PACE.

Report of Third District Councilor

There are three organized county auxiliaries in the Third District, which report as follows:

New Hanover-Brunswick-Pender Auxiliary
Officers:

President—Mrs. Graham B. Barefoot, Wilmington
Secretary—Mrs. Jere D. Freeman, Wilmington
Treasurer—Mrs. George Johnson, Wilmington
38 eligible doctors' wives
36 paid members
3 meetings held

Sampson County Auxiliary Officers:

President—Mrs. J. S. Brewer, Roseboro
Secretary and Treasurer—Mrs. E. T. Sessoms,
Roseboro

3 meetings held
15 eligible doctors' wives
8 paid members
2 subscriptions to Hygeia
24 Mercy Pins sold
\$2 paid to McCain Endowment

Duplin County Auxiliary, reorganized this year with the following officers:

President—Mrs. Guy V. Gooding, Kenansville
Secretary—Mrs. C. F. Hawes, Rose Hill
Treasurer—Mrs. Deanne Hundley, Wallace

2 meetings held
10 eligible doctors' wives
5 paid members

Membership dues for the district \$49.
Around 88 eligible doctors' wives.

Respectfully submitted,
MRS. D. M. ROYAL.

Report of Fourth District Councilor

Mrs. C. F. Strosnider

The councilor of the Fourth District has responded to all requests of the state president and has worked throughout the year to collect the dues from every eligible doctor's wife in the district, and has tried to organize the counties in the district.

The correspondence was 45 letters and 53 cards.
Number letters written to county medical societies—5.

Number of auxiliaries authorized—1.

Number of auxiliaries organized—1.

Total number county auxiliaries in district—2.

Number of county auxiliary meetings held—4
combination social and business meetings.

Number of eligible doctors' wives in district—97.

The Wayne County Medical Auxiliary officers are Mrs. S. B. McPheeters, Goldsboro, President; and Mrs. Henderson Irwin, Eureka, Secretary-Treasurer. This auxiliary has held two meetings during the year, one in the home of Mrs. W. H. Smith, with the state president, Mrs. Sidney Smith, giving a helpful inspirational talk, and Dr. C. F. Strosnider telling the auxiliary the part it should play in the nation's victory program. The second meeting was held at the home of Mrs. C. R. Brown at the State Hospital. Dr. Hendricks gave a talk on nutrition. At both of these meetings there was a social hour with refreshments.

This auxiliary also observed Doctors' Day very successfully, each doctor's wife drawing the name of some doctor other than her husband and sending a note from the auxiliary expressing appreciation of them and of their services to the community, along with some individual gift. They are also planning a picnic for the doctors and their wives some time in May.

I wish to thank Mrs. Erick Bell for collecting the dues in Wilson County and vicinity, and Mrs. L. W. Kornegay in Rocky Mount for her cooperation in helping in that vicinity.

One new auxiliary was formed in Halifax county March 13, 1942, at the home of Mrs. W. G. Suiter, Weldon, with 24 members. The president is Mrs. F. W. M. White of Halifax; secretary, Mrs. R. Y. Young. The organization of this unit was a very delightful occasion. Mrs. Suiter served a delicious buffet supper. In the absence of the president, your councilor was present and helped with the organization. Since this organization meeting the presi-

dent has held another meeting which was a luncheon with the state president, Mrs. Sidney Smith, as speaker.

I do wish to thank Dr. M. C. Maddry, Roanoke Rapids, for his wholehearted cooperation in helping to organize the Halifax County auxiliary.

Much credit is due Mrs. W. G. Suiter of Weldon for making this organization possible. For many years she has collected the dues 100 per cent for this section, and kept the doctors' wives aware of the fine work of the auxiliary. She is due thanks for this period of service and should be called the unofficial president for all these years. It was her generous soul, interest in the work, and gracious hospitality that led to the culmination of this successful organization March 13, 1942.

Respectfully submitted,
MRS. C. F. STROSNIER.

Report of Fifth District Councilor

There are nine county medical societies in the Fifth District, an organization for every county in the District. Of this number two societies have county auxiliaries—Hoke and Robeson. There is also a District Auxiliary which meets annually in conjunction with the Fifth District Medical Society.

The District meeting was held this year in Fayetteville in November, at the Fayetteville Woman's Club. The wives of doctors from Fort Bragg and the Veterans' Facility were invited to meet with the Auxiliary. A large group attended and heard interesting and instructive talks by the State Auxiliary president, Mrs. Sidney Smith of Raleigh, and by Dr. Lucy Morgan, representative from the United States Public Health Service. Dues were collected and a \$9.00 donation made to the McCain Endowment Fund. A delightful tea followed the meeting.

The doctors' wives in the District are foremost in all phases of defense work, and in Fayetteville several are on the executive board of the Women's Health Program for Defense, which is enlisting the interest of every woman in Fayetteville. Plans are being made for the reorganization of the Cumberland County Auxiliary, and Robeson County is having regular meetings with splendid programs on medical and defense subjects. Hoke County is winner of the President's Membership Award this year, being the first county in the state to enroll all eligible doctors' wives 100 per cent

Respectfully submitted,
MRS. WILLIAM T. RAINEY.

Report of Sixth District Councilor

Number of organized medical societies in the District	7
Number of organized auxiliaries in the District	2
Number of authorization letters to medical societies	5
Number of auxiliaries authorized	5
Number of auxiliaries organized	None
Number of counties visited	1
Number of eligible doctors' wives in the District	246
Number of members of county auxiliaries in District	70
Person	5
Wake	65
	70

Wake County has had a most successful year. In July a Year Book was drawn up. In it were listed the officers, advisory council, program schedule, a list of standing committees, and chairmen

for each of the monthly meetings.

8 meetings held	
Average attendance	35
Paid membership	65
Scientific programs 3: "Nutrition", "Blood Banks", "Preventive Medicine with Emphasis on Control of Venereal Disease."	
Civilian Defense Program	
Defense Study Classes	25
Air Raid Filter Center	7
Control Center	3
Registrars	8
O. C. D.	2
Interviewing applicants for Nurses Aides	1
Contributions:	
McCain-Stevens Upkeep	\$80.00
McCain-Stevens Endowment	20.00
Student Loan	\$15.00
Gift	5.00 20.00

Wake County assisted in the Auxiliary's National Defense program by selling Mercy Emblems, clearing \$226.60, which purchased two Emergency Field Sets and made part payment (\$6.60) on the third.—

Respectfully submitted,
MRS. POWELL G. FOX.

Report of Seventh District Councilor

There are nine Medical Societies in the district, with two organized and well functioning medical auxiliaries. Also, there is an organized district auxiliary.

On November 5, 1941, I attended the Seventh Medical Auxiliary meeting in Gastonia. There were about thirty-five representative members of the auxiliaries in this district present. Mrs. Forrest Houser of Cherryville was elected president, and Mrs. C. H. Pugh of Gastonia, secretary.

The Gaston County Medical Auxiliary has seventeen paid members, but has had only one meeting this year, with eight members present. However, this auxiliary has been busy sponsoring "The American Women's Volunteer Services".

The Mecklenburg Auxiliary has fifty-six paid members. It has had meetings regularly every two months with an average attendance of thirty-five to forty members. Interesting programs have been presented along the lines suggested by the State Program Chairman. This auxiliary has not sponsored any specific work, but has offered its services to the County Society, and a number of the members are helping in the various branches of the Defense Program.

Now that a good start has been made in this district, here's hoping next year will find us with more organized auxiliaries and an increased membership in the counties already organized.

Respectfully submitted,
MRS. AUBREY HAWES.

Report of Eighth District Councilor

In November Mrs. R. L. McMillan and Mrs. Beverly N. Jones, President and President-Elect of Forsyth County Medical Auxiliary, and Mrs. Fred Merritt and Mrs. Henry C. Sykes, President and Program Chairman of Guilford County Medical Auxiliary, met for lunch at my home and discussed plans for the year's work.

I have written forty-six letters or cards concerning auxiliary business.

A favorable reply to a letter to the Rockingham

County Medical Society, asking endorsement of the organization of an auxiliary, resulted in an organization tea at Mrs. Tuttle's home in Spray. The State President, Mrs. Sidney Smith, and Mrs. Henry McLeod, of Raleigh, Mrs. Karl Shepard, High Point, and I attended the tea.

The newly organized Auxiliary to the Rockingham County Medical Society has an excellent report, prompted by a fine spirit.

There are twenty-three paid up members out of the thirty-one eligible members from eight towns scattered over the County.

At one of their three meetings, Dr. C. C. Carpenter, of the Bowman Gray Medical School, talked on Cancer, and the public was invited to hear him.

The members in Leaksville-Spray have sponsored two Home Nursing Classes, which were taught by Mrs. Tyner and Mrs. Pace. The equipment was assembled by members and placed in Mrs. Tyner's basement-classroom, where the classes were held.

Checks for \$31.00 have been forwarded to Mrs. Lee for Mercy Emblems sold by this Auxiliary. I want to commend Mrs. Tyner, her officers and chairmen for their excellent cooperation as well as their splendid interpretation of the aims of the Medical Auxiliary by their unselfish service.

Forsyth County Medical Auxiliary has had a very satisfactory year under Mrs. R. L. McMillan's able leadership.

30 members

McCain Endowment Fund \$35.00

Student Loan Fund \$15.00

Mrs. Smith and I were present at the February dinner meeting, at which Mrs. Smith made an inspiring talk.

The Auxiliary members have worked one day a month at the Red Cross office.

Guilford County Medical Auxiliary has had an interesting year, with four meetings over which Mrs. Fred Merritt, President, presided.

27 members

Student Loan Fund \$20.78

McCain Endowment \$20.78

At the Christmas luncheon meeting, Mrs. Smith was present, as well as guests from Forsyth and Randolph Counties. Mrs. Smith made an interesting talk on the Auxiliary work as a whole.

At the annual Christmas meeting presents were collected for the patients in the Auxiliary's beds at the two Sanatoriums.

The Auxiliary joined the Society to hear Dr. Clifford J. Barborka lecture on "Nutrition in Relation to National Defense and Public Health" at the April meeting.

Members from Greensboro and High Point both have had an active part in the defense program of their respective communities.

Thirty-one Mercy Emblems were sold by the members.

Respectfully submitted,

MRS. E. T. HARRISON.

Report of Ninth District Councilor

At the request of our State President, form letters were sent to all county medical society presidents in the Ninth District asking permission to effect an organization of a county auxiliary and requesting the society to name an organizer in its respective county. Burke and Iredell-Alexander Societies, the only two responding, sent in the names of county organizers.

With the gracious cooperation of the secretaries of the various medical societies, a complete list of the names and addresses of eligible doctors' wives in the counties of Avery, Burke, Caldwell, Catawba, Davidson, Iredell, Alexander, Watauga and Mitchell are on file for the new councilor.

The Ninth District reports:

- (1) One organized county auxiliary, Caldwell. This Auxiliary meets four times a year with an average of 50 per cent of members in attendance.

The officers:

President—Mrs. L. M. Fetner . . . Lenoir

Vice Pres.—Mrs. W. G. Byerly . . . Lenoir

Secretary—Mrs. Len Hagaman . . . Lenoir

Treasurer—Mrs. A. A. Kent, Jr.

Granite Falls

- (2) An organized District Auxiliary. This meets once each year at the same time as the District Medical Society. Mrs. Douglas Hamer is president, and the next meeting will be in the fall of 1942 at Lenoir.

- (3) A potential membership of 160.

In response to questionnaires it was found that practically all doctors' wives are giving generously of their time to some form of defense work.

All communications have received attention.

Respectfully submitted,

MRS. JAMES W. VERNON

Report of Tenth District Councilor

As Councilor for the Tenth District, I sent a letter, on August 28, to the president of each county medical society in my district. These letters were written according to the form sent me.

To date, I have received two replies to these letters, one from the Henderson County Medical Society, approving the organization of an auxiliary and appointing Mrs. L. B. McDonald as organizer. The other reply was from the Transylvania County Medical Society, stating that their next meeting would not be held until October, but the secretary of the society said he felt certain that approval for the organization would be granted.

On November 9, I sent follow-up letters to all the county medical societies, urging them to take action on, and send me some definite word as to organizing in their respective counties. I received one answer to these letters, from the McDowell County Medical Society, appointing Mrs. J. F. Jonas as Councilor.

I wrote immediately to Mrs. Jonas sending her a copy of the Councilor's instructions and telling her to let me know the date of the first meeting of the organization. I have had no reply from Mrs. Jonas.

On November 9, several doctors' wives in Henderson County got in touch with me and told me they did not wish to organize, for various reasons.

On November 10, at the request of Mrs. Thomas Lee, I wrote to the wives of the presidents of the county medical societies in my district, asking them, with the help of all the doctors' wives in their county, to cooperate in the Mercy Emblem Drive. I also suggested in these letters that they cooperate with us in the attempt to organize an auxiliary in their respective districts.

There are seven county medical societies in the Tenth District, but no organized auxiliaries. Buncombe County formerly had an auxiliary and efforts are being made to arouse the doctors' wives in Asheville to reorganize.

Respectfully submitted,

MRS. D. I. CAMPBELL KING

Report of Chairman of the McCain-Stevens Beds

The patient in the McCain Bed is Dr. Meredith Johnson. We have another guest-patient in the Stevens Bed, Miss Doris Parker. On December 18, 1941, Dr. W. G. Byerly, who was our guest, was dismissed and on this same date Miss Parker was placed in our bed. Miss Parker was a nurse at the Western Sanatorium, having received her training in the Sanatorium Training School. I have received letters from all three of these guests thanking the Auxiliary for our part in their recovery.

I have tried to arouse and stimulate interest in our work, and several weeks ago I sent out letters to all the presidents of organized county auxiliaries in the state.

Respectfully submitted,
MRS. J. R. TERRY

Report of Student Loan Fund Chairman

In response to the request of our President, your Chairman has compiled the data concerning the Student Loan Fund to date, obtaining the larger part of the material from the annual reports of the State Auxiliary. She has brought the Loan Fund note book up to date, and written sixty-two letters and cards, making requests and soliciting funds for the Loan Fund.

Several requests for loans have been received.

A complete financial statement of this Fund will be made by our Treasurer.

Respectfully submitted,
MRS. JOHN S. HOOKER

Report of Corresponding Secretary

There has been no business of a special nature that has required the services of the Corresponding Secretary; therefore I have attended only to the routine correspondence as directed by our President, Mrs. Sidney Smith.

Respectfully submitted,
MRS. J. C. KNOX

Report of Treasurer

Receipts and Disbursements May 20, 1941—
May 20, 1942

GENERAL EXPENSE FUND

Balance on Deposit May 20, 1941	\$ 165.12
Dues 1941-1942 for 718 members (50 cents of each dollar)	359.00

\$ 524.12

Disbursements:

Hemmers for 6 Photos of Executive Board at 1941 Convention	\$ 6.00
Mrs. C. D. Thomas for 1941 Poster	2.00
Edwards and Broughton Company (1000 Letterheads and 1500 Envelopes)	18.20
Edwards and Broughton Company (300 Notes for making Students Loans)	6.90
Stearns Engraving Company (One large layout for pictures of Board)	9.64
Edwards and Broughton Company (1000 Letterheads)	9.00
Raleigh Letter Writers (Advanced 400 Postals and Multigraphed 900 Cards for Mrs. Sidney Smith, Pres.)....	11.00

News and Observer Publishing Company	3.15
Edwards and Broughton Company (1000 membership cards and one 1942 rubber stamp)	6.40
Mrs. David W. Thomas (National Treasurer 491 dues)	122.75
Mrs. Wingate M. Johnson (Postage, typing, and Bulletin)	4.75
Post Office (750 stamped envelopes)	24.38
Mrs. Ben Kendall (Postals and stamps)	5.00
Mrs. D. M. Royal (Postage) ..	1.50
Mrs. John S. Hooker (Postage and typing)	4.04
Mrs. C. F. Strosnider (Postage, typing, and mileage)	11.38
Mrs. Frances B. Williams (Designing, furnishing material and making poster)	8.50
Mrs. Sidney Smith, President (Postage, postals, telegrams, and materials)	30.00
Mrs. P. G. Fox (Postals and postage)	3.00
Mrs. Clyde R. Hedrick (Organizing expenses)	10.00
Mrs. Verne Caviness (Postage, telephone calls, and 7 picture mats)	6.00
Mrs. J. C. Knox (Postage and envelopes)	5.78
Miss Lunette Barber (Typing letters, reports, and rolls for Treasurer)	15.00
Mrs. E. C. Judd, Treasurer (Postage, postals, special deliveries, long distance calls)	9.88
Bank charges .....	.74
Tax .....	.60

Total

\$ 335.59

Balance

\$ 188.53

MCCAIN-STEVENS BEDS UPKEEP FUND

Balance on Deposit May 20, 1941	\$ 552.61
Dues for 718 members (50 cents of each dollar)	359.00
Contribution: Wake County Auxiliary	80.00

\$ 991.61

Disbursements:

N. C. Sanatorium for patients 12 months	\$ 182.13
Western N. C. Sanatorium for patients 12 months	185.92
Transferred to McCain Endowment Fund	311.78
(See By-Laws, Article VII)	

\$ 679.83

Balance

\$ 311.78

McCain Endowment Fund

Balance in Savings May 20, 1941	\$2,024.52
Receipts:	
Contribution: Hoke County Auxiliary	79.00
Interest May, 1941-October, 1941	20.04

Total	\$2,123.56
October 9, 1941, Bought United States Savings Bonds, Defense Series F, 12 years appreciation Bonds.	
3 One Hundred Dollar Bonds (\$74 each)	\$ 222.00
1 Five Hundred Dollar Bond	370.00
2 One Thousand Dollar Bonds (\$740 each)	1,480.00

Total Cost	\$2,072.00
October 9, 1941, Balance in Savings	\$ 51.56
Contribution: New Hanover County Auxiliary	75.00
Contribution: Forsyth County Auxiliary	35.00
Contribution: Guilford County Auxiliary	22.79
Contribution: Wake County Auxiliary	20.00
Contribution: Cumberland County (Mrs. W. T. Rainey)	9.00
Contribution: Robeson County Auxiliary	5.00
Contribution: New Bern Nurses Association	10.00
Contribution: Sampson County Auxiliary	2.00
Contribution: Mrs. Jerome L. Reeves	1.00
Contribution: Dr. Friend	1.00
Commission on Hygeia (Mrs. W. G. Byerly)	40.00
Contribution: Prize given by Mrs. P. P. McCain, won by New Hanover County Auxiliary	5.00
Contribution: Prize given by Mrs. Sidney Smith, won by Hoke County Auxiliary	5.00
Transferred from Upkeep Fund to McCain Endowment Fund (See By-Laws, Article VII)	311.78

Total	\$ 594.13
Disbursed:	
Tax	1.53
Balance	\$ 592.60

STUDENT LOAN FUND

Balance in Savings May 20, 1941	\$ 630.04
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Receipts:	
August 14, 1941, Received payment on Loan, Miss Margaret Whittington	50.00
September 23, 1941, received payment on Loan, Miss Margaret Whittington	10.00
Contribution: Guilford County Auxiliary	20.78
Contribution: Wake County Auxiliary	15.00
Contribution: Forsyth County Auxiliary	15.00
Contribution: Robeson County Auxiliary	5.00
Contribution: Collection taken at Convention	21.50
Contribution: Mrs. C. F. Strosnider	11.38
Contribution: Mrs. P. G. Fox	5.00
Contribution: Prize given by Mrs. J. S. Hooker, won by Guilford County Auxiliary	5.00
Interest:	10.22

Total	\$ 798.92
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Disbursements:

September 10, 1941, Loan to Charles Highsmith	\$ 100.00
September 15, 1941, Loan to Charles Whittington	100.00
January 15, 1942, Tax	.54

Total	\$ 200.54
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Balance	\$ 598.38
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Loans:

October 16, 1936	
Miss Margaret Knight	\$ 130.00
February 10, 1937, Miss Margaret Whittington	\$100.00
(August 14, 1941, pd. \$50.; September 23, 1942, pd. \$10)	40.00
August 24, 1939, Miss Margaret Whittington	100.00
September 13, 1940, Charles Highsmith	100.00
September 10, 1941, Charles Highsmith	100.00
September 15, 1941, Charles Whittington	100.00

Total	\$ 570.00
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Total Savings and Loans	\$1,168.38
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DEFENSE

1941-1942

Medical and Surgical Relief Committee of America
(Headquarters New York City)
Mrs. T. L. Lee, Kinston, North Carolina State
Medical Auxiliary Chairman

Receipts:

October 21, 1941, Mrs. T. L. Lee	\$ 300.00
March 20, 1942, Mrs. T. L. Lee	99.00
April 14, 1942, Mrs. T. L. Lee	283.20
May 7, 1942, Mrs. T. L. Lee	120.00
May 8, 1942, Dr. Bayard Carter (Contribution)	5.00
June 8, 1942, Mecklenburg County Auxiliary	125.00

Total	\$ 932.20
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Disbursements:

October 27, 1941, Mrs. Rogers Balcom, Chairman Medical and Surgical Relief Committee of America, New York, New York	\$ 300.00
March 22, 1942, Mrs. Rogers Balcom, Chairman Medical and Surgical Relief Committee of America, New York, New York	99.00
April 17, 1942, Medical and Surgical Relief Committee of America, New York, New York	283.20
May 9, 1942, Medical and Surgical Relief Committee of America, New York, New York	125.00
June 8, 1942, Medical and Surgical Relief Committee of America, New York, New York	125.00

Total	\$ 932.20
This \$932.20 purchased nine Emergency Medical	

Field Sets. Six have been placed in North Carolina. The other three will be sent when needed.

DISBURSEMENTS AND BALANCES

1941-1942

General Expense Account.....	\$ 524.12	
General Expenses	335.59	
		\$ 188.53
Upkeep McCain-Stevens Beds.....	\$ 991.61	
Expenses for patients 1941-42....	368.05	
Transferred to		
McCain Endowment Fund.....	311.78	
(See By-Laws, Article VII)		
		\$ 311.78
McCain Endowment Fund.....	\$2,666.13	
United States		
Savings Defense Bonds.....	2,072.00	\$2,072.00
Tax	1.53	
		\$ 592.60
Amount in Savings.....		
Amount in Savings		
Student Loan Fund.....		598.38
Loans		570.00
Sale of Mercy Emblems.....	\$ 932.20	
Nine Emergency		
Medical Field Sets.....	932.20	
		\$ 000.00
Balance		\$4,333.29

Respectfully submitted,
MRS. E. CLARENCE JUDD

Report of the Chairman on Revisions

The Revisions Chairman studied the minutes of previous meetings for changes which should be incorporated in the published By-Laws, and also presented the following changes at the Annual Meeting:

- (1) Provision for the Stevens Bed to share in the portions of the dues heretofore allotted solely to the McCain Bed.
- (2) Provision for separate chairmen for the McCain and Stevens Beds.
- (3) Changes in the duties of vice-chairmen as follows: First vice president to remain as chairman of Organization; second vice president to come from the eastern part of the state and to be chairman of the McCain Bed and Endowment Fund; third vice president to come from the western part of the state and to be chairman of the Stevens Bed Fund; fourth vice president to have the duties formerly given to the third vice president as chairman of the Student Loan Fund.

A provision whereby the nominee for president-elect must be chosen from members who have served on the Board of Directors one year was voted down.

Article 7—Finances

Sec. 2. The Finance and Budget Committee shall submit to the Board of Directors at the pre-convention meeting a budget for the coming year. This budget, together with any changes adopted by the Board, shall be submitted to the Annual Meeting for discussion and adoption. It shall then be binding upon the Executive Committee.

Sec. 4. Officers and chairmen whose work has necessitated the expenditure of money during the year shall present an itemized statement of such expenditures to the treasurer two weeks prior to the Annual Meeting. These accounts shall not exceed the amounts budgeted for any specific activity. All budgeted funds not used shall remain in the general treasury.

Article 15

Affiliation with the Southern Medical Auxiliary

Sec. 1. The Councilor to the Southern Medical Auxiliary shall be, ex-officio, a member of the Board of Directors of this Auxiliary

Sec. 2. This Auxiliary shall have chairmen of Research, Jane Todd Crawford Memorial Loan Fund, and Doctors' Day, who shall interpret and promote these activities of the Southern Medical Auxiliary in this organization. They shall work directly under the corresponding chairmen in the Southern Medical Auxiliary, reporting to them and to the Board of Directors of this Auxiliary and to the State Councilor.

Sec. 3. The research chairman shall prepare such articles as may be requested by the research chairman of the Southern Medical Auxiliary, and shall file three typewritten copies of all articles submitted with the Southern Medical Auxiliary Research chairman, one with the recording secretary of this organization, and keep one in her files to be passed on to her successor.

Sec. 4. The chairman of the Jane Todd Crawford Memorial Loan Fund shall take a silver offering at each Annual Meeting for this fund. The proceeds from this offering shall be placed in the general fund of the State treasury and shall be forwarded by the treasurer to the treasurer of the Southern Medical Auxiliary.

Sec. 5. The chairman of Doctors' Day shall promote the observance of March 30 as the day on which members of this Auxiliary will honor in some manner the doctors of North Carolina.

Report of the Councilor to the Southern Medical Auxiliary

Each Southern state has a councilor to the Southern Medical Auxiliary who serves for a term of three years and is appointed by the President of the Southern Medical Auxiliary. This Councilor is the connecting link between the state organization and the Southern Medical Auxiliary, and promotes the three activities of the latter organization, which are: (1) the building of a loan fund to educate the sons and daughters of physicians and which honors Jane Todd Crawford, the first woman to have a major operation under an anesthetic; (2) research into the lives and works of our pioneer doctors and outstanding scientific events in the state, this being in the hands of a research chairman, who files three typewritten copies of her papers with the research chairman of the Southern Medical Auxiliary, one with the recording secretary of the State Auxiliary, and keeps one for her own files to be turned over to her successor; (3) the observance of Doctors' Day on March 30, when each auxiliary is asked to honor the doctors in some way.

The State Auxiliaries pay no dues to the Southern Medical Auxiliary. Finances are taken care of by an allotment each year of \$200.00 from the treasury of the Southern Medical Association.

North Carolina has contributed to the Jane Todd Crawford Memorial Loan Fund. Two auxiliaries observed Doctors' Day, and the Research chairman prepared a paper on the life of Dr. C. C. Hudson, who pioneered in North Carolina public health work.

Respectfully submitted,
MRS. J. BUREN SIDBURY

Acceptance Speech of President of the Auxiliary To The Medical Society of the State of North Carolina

Mrs. R. A. Moore

In accepting this office of president, I am beset by conflicting emotions. On the one hand, I feel very reluctant to follow in the footsteps of our most

efficient immediate past president as I realize her capabilities and limitless initiative would be very hard to emulate. On the other hand, I think that I am indeed fortunate to follow one who has the mechanism of the organization in such smooth running condition, and I am sure that I shall find many difficult places made easier because of her wise leadership of the past year. I accept this new responsibility with the full realization of the obligation it imposes on me, and I shall carry out my duties to the best of my ability.

These are critical times in the life of our nation. Doctors will be heavily burdened with added responsibilities, and as they take up their work cheerfully, so shall we, as the word "auxiliary" implies, be an aid to them in every endeavor that is possible.

We shall endeavor to carry out the policies of our National Auxiliary.

As an important means of promoting health education, the Woman's Auxiliary has for many years been responsible for the promotion of *Hygeia* the health magazine. *Hygeia* presents scientific information in an understandable form for the lay readers. Much confusion of thought, relating to recent trends in scientific medicine is cleared up in the articles found in this magazine. Let us strive to increase its circulation among the parent-teacher groups, public libraries, doctors' and dentists' offices, beauty parlor and barber shops, in the army camps, and among individuals.

We shall, through the county auxiliary units, keep always on the alert as to legislative enactments relating to the doctors' status in the state and nation. By being informed on matters of health legislation, we shall be able to discuss judiciously these problems. In reference to this subject, I should like to quote from an address of our National President, Mrs. R. E. Mosiman: "The time has come when poorly informed wives of doctors may do actual harm to the welfare of scientific medicine." I would suggest that in the county auxiliaries, one program a year be devoted to the discussion of legislative problems; and that the local legislative chairman, through the national and state chairmen, bring the desired information, and urge that the women of the auxiliary use their power of vote. Several of the county units have invited members of the Medical Society to speak on this subject.

Our work in public relations has assumed major proportions this year because of the augmented program of health defense. We shall promote the policies of the North Carolina Medical Society and the American Medical Association and try to acquaint the public with means of acquiring authentic information on health.

In a recent conversation our legislative chairman, Mrs. Wingate Johnson, said, "A very important service can be made by every member of every auxiliary during the coming year by making civilian population conscious of ways in which to save the doctors working on the home front. With one doctor to about every 1300 people in North Carolina as compared to one for every 150 soldiers, there is a tremendous responsibility on the ones at home. Let us in season and out impress upon all individuals and groups that for these doctors to do the work that is to be done, we must save them in every way possible. If we would (1) put in a call for the doctor before nine o'clock in the morning (except, of course, in emergencies), (2) go to the doctor's office instead of calling him to the home, and (3) learn and teach others not to say 'Come at once,' when any time during the day would do as well—the doctors' tires, gasoline, time, and above all, energy and strength would be saved.

"We have had to learn in the past few months to save our grocers and merchants; surely we can do as much for our doctors, the ones who are trying to give their best to us."

We shall include in our program subjects particularly pertinent to home defense. It is important, first of all, that we as women strive to keep an emotional balance in these days of chaotic complexity and grave problems. The serenity and stability of the home are prime factors in keeping up the morale of the nation.

One of our specific duties, as outlined by the National Auxiliary, is in the field of nutrition. The wives of doctors in some communities have already taken the course in nutrition offered by the Red Cross. The home economics teachers throughout the state have given unselfishly of their time to make these classes possible for so many, and I heartily recommend this course to all who have not yet availed themselves of this opportunity. By studying food values, production and conservation, we shall be able to make a practical application of this knowledge in our homes and in the community.

The many other Red Cross courses such as First Aid, Nurses' Aide, Home Nursing, Canteen Work, Motor Corps, Staff Assistant, and work in the sewing room are of such a wide scope that one is able to choose the type of work best suited to one's ability.

We shall also find our places for volunteer service in civilian defense. Through this medium we shall find many opportunities to learn how to be well organized and alert to any national emergency. Someone has said, "If we never need what we learn, we lose nothing, but if we never learn what we need we lose everything."

In North Carolina, not only do we strive to cooperate with the national program for the auxiliaries, and work for national defense, but we have a very definite and very special commitment as a state project. The McCain and the Stevens beds are maintained for tuberculous patients in state sanatoria to be used primarily by doctors' families or nurses. We are building a \$10,000 Endowment Fund for the first of these beds.

We maintain a Student Loan Fund for the use of sons and daughters of doctors who might otherwise be unable to complete their college educations. Let us continue to give our best efforts to these worthy projects so that we may help our colleagues in the profession who have met with illness or other misfortunes.

We shall also observe Doctors' Day on March 30. The county units are urged to plan to honor the doctors in the way that best benefits their individual groups.

As a State Auxiliary project, the establishment of blood or plasma banks in the county units, where the proper procedure could be arranged, would be of inestimable value and a most worthy project for the wives of doctors. The advisory board has been consulted in regard to this undertaking, and has given consent with a note of commendation for the furtherance of this idea.

It is gratifying to note the increase in membership this year. The membership of our State Auxiliary is 718 with 17 counties and 3 districts organized. The membership of the State Medical Society is 1670 with 67 counties organized. These figures show that we have nearly 1,000 potential new members. This is a large percentage of women in our state who are not actively engaged in the medical auxiliary work. Let each one of us feel responsible for making personal contacts with these eligible members, and we may be assured that we shall be gratified by the response. This is a time for doctors'

wives to work harmoniously and in unity of purpose, as an auxiliary, furthering the worthy aims of the organization, and cementing friendships and understanding.

In the mass of appeals that beset us every day for the use of our time and energy, let us consider first the place of our auxiliary in the community as a constructive instrument of health education and national defense.

It has been said that defense calls for the highest efficiency of a nation. The health of the people is the strength of the nation and the doctor takes his place in the front line of defense. So the doctor's wife working in the interest of better health conditions, through the program of the auxiliary, has a very definite call to service in these troublous times.

In observing the growth of the Auxiliary to the Medical Society of the State of North Carolina since its organization on April 18, 1923, I am ever mindful of the active and able leadership of my predecessors. It has been through their wise and progressive planning that we have this organization today. With the cooperation of our state officers, state chairmen, and district councilors, we shall try to carry on the work, making every effort to uphold the standards they have set for us.

In the year to come we shall find new duties, wider fields of service and sacrifice, and we shall willingly

accept these duties with a resolve to do our utmost to make the program of the auxiliary effective in the present world situation.

POST-CONVENTION EXECUTIVE BOARD

MEETING—MAY 13, 1942

Minutes

The Executive Board of the Auxiliary to the Medical Society of the State of North Carolina met in Post-Convention Session in the Hotel Charlotte, Pine Room, Charlotte, Mrs. R. A. Moore, the president, presiding. Fifteen members were present.

The president, Mrs. Moore, announced the chairmen of standing committees and councilors.

Mrs. Wingate Johnson suggested that publicity be given to a "Spare the Doctor" campaign, stressing the necessity for conserving the doctors' hours and strength.

Mrs. Sidney Smith made some recommendations.

The Fall meeting will be held in Sanatorium with Mrs. McCain.

The meeting adjourned.

MRS. HARRY WINKLER

Recording Secretary

All minutes approved by:

Mrs. J. B. Sidbury

Mrs. E. C. Judd

Mrs. James W. Vernon

ROSTER OF MEMBERS

1941-1942

Mrs. Adams, C. N. Winston-Salem
Mrs. Adams, J. R. Charlotte
Mrs. Ader, O. L. Walkertown
Mrs. Alexander, G. T. Thomasville

Mrs. Alexander, J. M. Charlotte
Mrs. Allan, Wm. Charlotte
Mrs. Allen, Geo. C. Lumberton
Mrs. Allen, J. A. New London
Mrs. Anderson, Wade H. Wilson
Mrs. Andes, P. E. Leaksville
Mrs. Andrew, J. M. Lexington
Mrs. Andrew, L. A. Winston-Salem

Mrs. Anthony, W. A. Gastonia
Mrs. Ashby, Edward C. Mount Airy

Mrs. Ashford, Chas. H. New Bern
Mrs. Avery, E. S. Winston-Salem
Mrs. Aycock, F. M. Princeton
Mrs. Bailey, R. L. W. Winston-Salem

Mrs. Baker, C. S. New Bern
Mrs. Baker, H. M. Lumberton
Mrs. Baker, Lenox D. Durham
Mrs. Ball, M. W. New Bern
Mrs. Barbee, G. S. Zebulon
Mrs. Bardin, R. M. Roanoke Rapids

Mrs. Barefoot, Graham B. Wilmington
Mrs. Barnes, J. T. Asheboro
Mrs. Barrett, J. M. Greenville
Mrs. Barringer, A. L. Mt. Pleasant

Mrs. Baxter, O. D. Charlotte
Mrs. Beam, H. M. Roxboro
Mrs. Beams, R. S. Lumberton
Mrs. Beard, G. C. Atkinson
Mrs. Beasley, E. Bruce Fountain

Mrs. Beckwith, R. P. Roanoke Rapids
Mrs. Bell, Erick Wilson
Mrs. Benbow, E. V. Winston-Salem

Mrs. Bender, J. R. Lexington
Mrs. Bender, John T. Red Springs
Mrs. Bennett, E. C. Elizabethtown
Mrs. Benson, N. O. Lumberton
Mrs. Benton, Wayne Jamestown
Mrs. Berryhill, Recce Chapel Hill
Mrs. Billings, G. M. Morganton
Mrs. Bittinger, C. L. Mooresville
Mrs. Bittinger, S. M. Black Mountain

Mrs. Bizell, Malcolm E. Goldsboro
Mrs. Bizzell, T. M. Goldsboro
Mrs. Black, O. R. Landis
Mrs. Blackshear, T. J. Wilson
Mrs. Blackwelder, Verne H. Lenoir

Mrs. Blair, Andrew Charlotte
Mrs. Blair, J. L. Gastonia
Mrs. Blair, J. Sam. Gastonia
Mrs. Blair, Mott P. Marshville
Mrs. Blalock, B. K. Charlotte
Mrs. Block, M. L. Lexington
Mrs. Blowe, R. B. Weldon
Mrs. Bost, T. C. Charlotte
Mrs. Bowers, M. A. Winston-Salem

Mrs. Bowman, Chas. Kannapolis
Mrs. Bowman, E. L. Lumberton
Mrs. Bowman, H. E. Aberdeen
Mrs. Bradford, George E. Winston-Salem

Mrs. Bradshaw, T. G. Wilson
Mrs. Brewer, J. S. Roseboro
Mrs. Bridges, D. H. Bladenboro
Mrs. Britt, J. N. Lumberton

Mrs. Britt, T. C. Mt. Airy
Mrs. Brooks, E. B. Winston-Salem
Mrs. Brooks, F. P. Greenville
Mrs. Brooks, R. E. Burlington
Mrs. Broughton, A. C. Jr. Raleigh

Mrs. Broun, M. S. Roanoke Rapids
Mrs. Brown, C. R. Goldsboro
Mrs. Brown, G. W. Raeford
Mrs. Brown, J. A. Banner Elk
Miss Brown, Katherine B. Fairmont

Mrs. Bryant, A. L. Raeford
Mrs. Buckner, J. M. Swannanoa
Mrs. Buffalo, J. S. Garner
Mrs. Bulla, A. C. Raleigh
Mrs. Bullock, Douglas D. Rowland

Mrs. Bulluck, Ernest Wilmington
Mrs. Bunn, R. W. Winston-Salem
Mrs. Burleson, W. B. Plumbtree
Mrs. Busby, Julian Kannapolis
Mrs. Byerley, W. G. Lenoir
Mrs. Byerly, A. B. Cooleemee
Miss Byerly, Victoria Cooleemee
Mrs. Byrnes, Thomas H. Charlotte

Mrs. Caldwell, Morris Wilmington
Mrs. Caldwell, Robert M. Mt. Airy
Mrs. Campbell, A. C. Raleigh
Mrs. Cardwell, Willard Greensboro

Mrs. Carmichael, T. W. Rowland
Mrs. Carpenter, C. C. Winston-Salem
Mrs. Carrington, Geo. L. Burlington
Mrs. Carrington, S. M. Oxford

- Mrs. Carroll, F. W. Hookerton
 Mrs. Carson, Merl J. Wilmington
 Mrs. Carter, Bayard Durham
 Mrs. Carter, P. T. Aberdeen
 Mrs. Carter, Paul C. Madison
 Mrs. Casteen, Kenan Leaksville
 Mrs. Caviness, Z. M. Raleigh
 Mrs. Caviness, Verne S. Raleigh
 Mrs. Cekada, Emil B. Durham
 Mrs. Choate, Allyn B. Charlotte
 Mrs. Clark, Bodie Wilton
 Mrs. Clark, D. D. Clarkton
 Mrs. Clark, M. S. Goldsboro
 Mrs. Clark, W. T. Greensboro
 Mrs. Clay, C. E. Denton
 Mrs. Cobb, D. B. Goldsboro
 Mrs. Cocke, C. H. Asheville
 Mrs. Codington, Herbert A. Wilmington
 Mrs. Cole, H. A. Roanoke Rapids
 Mrs. Coleman, G. S. Raleigh
 Mrs. Coleman, H. R. Wilmington
 Mrs. Combs, J. J. Raleigh
 Mrs. Combs, V. F. Winston-Salem
 Mrs. Cooke, G. C. Winston-Salem
 Mrs. Cooley, S. S. Black Mountain
 Mrs. Cooper, A. D. Durham
 Mrs. Cooper, G. M. Raleigh
 Mrs. Corbett, J. P. Swansboro
 Mrs. Corpening, O. J. Granite Falls
 Mrs. Covington, J. M. Wadesboro
 Mrs. Cox, G. S. Tabor City
 Mrs. Cozart, B. F. Reidsville
 Mrs. Cozart, W. S. Fuquay Springs
 Mrs. Cranmer, John B. Wilmington
 Mrs. Craven, Thomas, Huntersville
 Mrs. Crawford, R. H. Rutherfordton
 Mrs. Crisp, S. M. Greenville
 Mrs. Crouch, A. McR. Wilmington
 Mrs. Crowell, L. A., Sr. Lincolnton
 Mrs. Crowell, L. A., Jr. Lincolnton
 Mrs. Crumpler, A. G. Fuquay Springs
 Mrs. Crumpler, P. M. Clinton
 Mrs. Cummings, M. P. Reidsville
 Mrs. Currie, D. S., Sr. Fayetteville
 Mrs. Currie, D. S. Parkton
 Mrs. Cutchin, J. H. Whitakers
 Mrs. Dalton, B. B. Liberty
 Mrs. Daniels, Ralph New Bern
 Mrs. Darden, Douglas B. Wilmington
 Mrs. Davis, C. B. Wilmington
 Mrs. Davis, J. W. Statesville
 Mrs. Davis, James M. Wadesboro
 Mrs. Davis, Phillip B. High Point
 Mrs. Davis, R. B. Greensboro
 Mrs. Dawson, J. N., Lake Waccamaw
 Mrs. Dees, Rigdon Greensboro
 Mrs. Dewar, W. B. Raleigh
 Mrs. Dickinson, K. D. Raleigh
 Mrs. Dillard, G. P. Draper
 Mrs. Dixon, Gay, Greenville
 Mrs. Dixon, Grady G. Ayden
 Mrs. Doshier, William, Wilmington
 Mrs. Drummond, C. S. Winston-Salem
 Miss Duffy, Bertha New Bern
 Mrs. Duffy, Charles New Bern
 Mrs. Duffy, Richard New Bern
 Mrs. Dula, Fred M. Lenoir
 Mrs. Dunn, Richard B. Greensboro
 Mrs. Eason, H. F. Sanatorium
 Mrs. Efmon, S. L. Fayetteville
 Mrs. Eldridge, Chas. P. Raleigh
 Mrs. Eller, Albert J. Wilkesboro
 Mrs. Elliott, A. H. Wilmington
 Mrs. Elliott, John Salisbury
 Mrs. Elliott, Joseph A. Charlotte
 Mrs. Ennett, M. T. Greenville
 Mrs. Epstein, H. G. Goldsboro
 Mrs. Ervin, John W. Morganton
 Mrs. Evans, John E. Wilmington
 Mrs. Falls, Robert, Wilmington
 Mrs. Farthing, J. Watts, Wilmington
 Mrs. Farthing, L. W. Wilmington
 Mrs. Farrington, Joe, Thomasville
 Mrs. Farrington, R. K. Thomasville
 Mrs. Fassett, B. N. Durham
 Mrs. Fearrington, J. C. P. Winston-Salem
 Mrs. Feezor, C. N. Mooresville
 Mrs. Ferguson, R. T. Charlotte
 Mrs. Ferneyhough, W. T., Reidsville
 Mrs. Fetner, L. M. Lenoir
 Mrs. Fields, Leonard E., Chapel Hill
 Mrs. Fike, Ralph, Wilton
 Mrs. Fitzgerald, J. D. Roxboro
 Mrs. Flagge, P. W. High Point
 Mrs. Fleming, M. I. Rocky Mount
 Mrs. Flowers, C. W. Zebulon
 Mrs. Fooneyhough, W. P., Reidsville
 Mrs. Forbes, P. E. Madison
 Mrs. Fox, P. G. Raleigh
 Mrs. Fox, R. E. Raleigh
 Mrs. Freeman, Jere D., Wilmington
 Mrs. Frizzelle, M. T. Ayden
 Mrs. Frost, Thomas T., Indianapolis, Ind.
 Mrs. Fryer, Douglas, Leaksville
 Mrs. Fulp, Frances, Stoneville
 Mrs. Gage, L. C. Charlotte
 Mrs. Gambrell, G. C. Lexington
 Mrs. Gamble, J. R. Lincolnton
 Mrs. Garrard, R. L. Greensboro
 Mrs. Garrenton, Cecil, Bethel
 Mrs. Garrison, Ralph, Hamlet
 Mrs. Garvey, Fred, Winston-Salem
 Mrs. Garvey, R. R., Winston-Salem
 Mrs. Gaskin, Lewis R., Albemarle
 Mrs. Gay, Charles H. Charlotte
 Mrs. Gaul, J. S. Charlotte
 Mrs. Gibbs, N. M. New Bern
 Mrs. Gibson, M. R. Raleigh
 Mrs. Gilbert, E. L., Winston-Salem
 Mrs. Glenn, H. F., Jr. Gastonia
 Mrs. Glenn, L. N. Gastonia
 Mrs. Gold, Ben, Shelby
 Mrs. Gooding, G. V. Kenansville
 Mrs. Goodwin, C. W. Wilson
 Mrs. Goodwin, O. S. Apex
 Mrs. Goswick, H. W., Winston-Salem
 Mrs. Grady, Franklin, Mooresville
 Mrs. Graham, Charles P., Wilmington
 Mrs. Gray, E. P. Winston-Salem
 Mrs. Green, T. M. Wilmington
 Mrs. Greene, P. Y. Burlington
 Mrs. Greenwood, S. E., Hendersonville
 Mrs. Griffis, J. W. Denton
 Mrs. Griffith, F. Webb, Asheville
 Mrs. Grimes, W. L., Winston-Salem
 Mrs. Grollman, Arthur, Winston-Salem
 Mrs. Groves, R. B. Lowell
 Mrs. Guire, B. B. Newland
 Mrs. Haar, F. B. Greenville
 Mrs. Hagaman, J. B. Boone
 Mrs. Hall, W. D. Roanoke Rapids
 Mrs. Hamer, A. W. Morganton
 Mrs. Hamer, Douglas, Jr., Lenoir
 Mrs. Hamer, Jerome, Charlotte
 Mrs. Hamer, W. A. Charlotte
 Mrs. Hamilton, John H. Raleigh
 Mrs. Harden, Graham, Burlington
 Mrs. Hardin, E. R. Lumberton
 Mrs. Hare, R. B. Wilmington
 Mrs. Harrell, L. J. Goldsboro
 Mrs. Harrill, James, Winston-Salem
 Mrs. Harris, A. H. Wilmington
 Mrs. Harrison, E. T., High Point
 Mrs. Harrison, Tinsley, Winston-Salem
 Mrs. Hart, Deryl, Durham
 Mrs. Hart, V. K. Charlotte
 Mrs. Harvey, W. W. Greensboro
 Mrs. Hatcher, M. A. Hamlet
 Mrs. Hawes, Aubrey, Charlotte
 Mrs. Hawes, Forest, Rose Hill
 Mrs. Hawes, J. B. Greenville
 Mrs. Haywood, Hubert B., Raleigh
 Mrs. Hedgepeth, Carey, Lumberton
 Mrs. Hedgepeth, E. M., Roxboro
 Mrs. Hedgepeth, L. R., Lumberton
 Mrs. Hedrick, Clyde R. Lenoir
 Mrs. Hege, J. Roy, Winston-Salem
 Mrs. Helms, J. Bivens, Morganton
 Mrs. Helsabeck, B. A., Winston-Salem
 Mrs. Helsabeck, R. S., King
 Mrs. Herring, Edward, Raleigh
 Mrs. Hester, J. R. Wendell
 Mrs. Hester, W. S. Reidsville
 Mrs. Hickman, H. S. Lenoir
 Mrs. Hicks, V. M. Raleigh
 Mrs. Hightower, Felda, Winston-Salem
 Mrs. Highsmith, J. F., Jr., Fayetteville
 Mrs. Hill, M. D. Raleigh
 Mrs. Hipp, Edward R. Charlotte
 Mrs. Hips, Allen T. Asheville
 Mrs. Hitch, Joseph, Raleigh
 Mrs. Hocutt, B. A. Clayton
 Mrs. Hoggard, John T., Wilmington
 Mrs. Holbrook, J. S. Statesville
 Mrs. Hollister, William, New Bern

- Mrs. Holmes, A. B. Fairmont
 Mrs. Holmes, G. W., Winston-Salem
 Mrs. Hooper, Joseph W., Wilmington
 Mrs. Hoover, C. H. Crouse
 Mrs. Hoover, W. A. Murphy
 Mrs. Horowitz, Isaac Sanatorium
 Mrs. Houser, F. M. Cherryville
 Mrs. Hovis, L. W. Charlotte
 Mrs. Howard, G. E. Goldsboro
 Mrs. Hubbard, C. C. Asheboro
 Mrs. Hundley, Deane Wallace
 Mrs. Hunt, W. B. Lexington
 Mrs. Hunter, W. C. Wilson
 Mrs. Hurdle, S. W., Winston-Salem
 Mrs. Hutchinson, S. S., Bladenboro
 Mrs. Irving, Henderson, Eureka
 Mrs. Ivey, H. B. Goldsboro
 Mrs. Izlar, H. L. Winston-Salem
 Mrs. Jackson, M. V. Princeton
 Mrs. Jackson, W. L. High Point
 Mrs. James, W. D. Hamlet
 Mrs. Jarman, F. G., Roanoke Rapids
 Mrs. Jennings, R. G. Thomasville
 Mrs. Johnson, C. T. Red Springs
 Mrs. Johnson, Frank, Spray
 Mrs. Johnson, George, Wilmington
 Mrs. Johnson, Harry L., Greensboro
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BOOK REVIEWS

(CONTINUED FROM PAGE 511)

Pain. By Sir Thomas Lewis, M.D., F.R.S., Physician in Charge of Department of Clinical Research, University College Hospital, London; Fellow of University College, London. 192 pages. Price, \$3.00. New York: The Macmillan Company, 1942.

This latest monograph by Sir Thomas Lewis should add considerably to his reputation for clinical research along the lines begun by his famous teacher, Sir James Mackenzie. Beginning with a consideration of the characteristics of pain produced in superficial and in deep tissues and in the viscera, he discusses the anatomical basis of pain, the various factors modifying pain, and the mechanism of referred pain, particularly the pain of visceral disease. A clear and cogent argument is presented for a single system of afferent pain nerves, common both to the viscera and to somatic structures. "Physiologically and anatomically, pain fibers supplying the two types of tissues are alike; and the fact that those from somatic structures at first use the channel of the spinal nerve, and that those from visceral structures at first use the channel of the anatomical sympathetic system before entering the posterior roots, is really immaterial."

A final chapter, on "Principles in the Clinical Use of Pain", is practical and helpful. The book is written in Sir Thomas's usual clear and readable manner, which makes it a delight to read; and it also throws a flood of light on a much-discussed and poorly understood subject.

A History of Medical Psychology. By Gregory Zilboorg, M.D., in collaboration with George W. Henry, M.D. 606 pages, illustrated. Price, \$5.00. New York: W. W. Norton and Company, Inc., 1941.

By the student of medical history and by any physician whose interests lie at all in the direction of psychology and psychiatry, this work by Gregory

Zilboorg will be gratefully welcomed. It is described as the first history of medical psychology in any language. Its author, a Russian by birth, attended the Psychoneurological Institute of Petersburg and later obtained a medical degree from the College of Physicians and Surgeons of Columbia University. He has become noted as a lecturer, author and medical historian.

This work is readable and highly instructive. Its scope is wide, beginning with a discussion of primitive and oriental medical psychologies and progressing through the long dark age which preceded our present relatively enlightened state. The reader is impressed with the long strides which have been made in the understanding and handling of disorders of the mind, but at the same time is struck with the tremendous room for further progress.

The long story of the fight of psychiatry to make a place for itself in the group of medical sciences is related by the author, and attention is called to the fact that "we are still ashamed to confess to a neurosis or a more serious mental illness; we conceal the fact of suicide as if it were still a true crime against God and the State."

Altogether, this book makes fascinating reading to everyone interested in human psychology—and who isn't?

The Reception of William Beaumont's Discovery in Europe. By Dr. George Rosen, with a foreword by Dr. John F. Fulton. 97 pages. Price, \$5.00. New York: Schuman's, 1942.

William Beaumont, Benjamin Franklin and Weir Mitchell comprise a triumvirate who, during the infancy of our republic, had a profound and world-wide influence upon the medical thought of their day. Beaumont's contributions were particularly significant. A young military surgeon with no previous special academic or scientific accomplishment, he established a scientific basis for gastroenterology with his findings in a single thoroughly investigated case.

Dr. Rosen's study of the reception of Beaumont's discovery in Europe is a thorough and scholarly accomplishment. It covers the history of gastric physi-

ology in its beginnings, and in this well-documented essay shows how Beaumont's contribution established the basis for a new field of investigation. The author and publishers are to be commended for making this volume available to the medical reader.

Synopsis of Applied Pathological Chemistry.

By Jerome E. Andes, M.S., Ph.D., M.D., F.A.C.P., Director of Department of Health and Medical Advisor, University of Arizona; and A. G. Eaton, B.S., M.A., Ph.D., Assistant Professor of Physiology, Louisiana State University School of Medicine. Price, \$4.00. 428 pages, with 23 illustrations. St. Louis: C. V. Mosby Company, 1941.

This book is a clear, concise and authoritative summary of analytical methods for blood, urine, cerebrospinal fluid, gastric contents, renal and hepatic functions, and basal metabolism. The significance of chemical data, both normal and pathological, is briefly discussed, then summarized in tables—a unique and valuable feature. The practicing physician will find these chapters an invaluable aid in using chemical data for diagnosis and treatment, and in keeping pace with recent developments in chemical pathology. The detailed procedures make it an excellent text and laboratory guide for student technicians, pathologists, and clinical chemists.

Several arbitrary statements should be changed or qualified in future editions; for example, nitrogen retention in toxemia of pregnancy is classified as extrarenal (p. 86), and ketonuria is said to be indicative of diabetes mellitus (p. 297). References to photoelectric methods have been relegated to a single

footnote (p. 151), a rather unfortunate lack of emphasis in view of the widespread use of the photoelectric colorimeter. However, these minor defects do not detract from the general excellence of the book.

The Permanence of Knowledge.—Knowledge once available is destined to be a permanent possession; for all our inventive skill we can conceive of no method by which facts once understood can be forced back into the limbo of the mysterious and the unknown. The road of learning which the human race has been traveling permits of motion in only one direction. To go backward necessarily implies that the species were to become something less than human.—Frank B. Jewett and Robert W. King: *Engineering Progress and the Social Order*, Science 92:366 (October 25) 1940.

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GENERAL SURGERY AND THE SURGICAL SPECIALTIES

HUBERT A. ROYSTER, M. D., D.Sc.
RALEIGH

Time was when the surgeon, without prefix or suffix, was a specialist. With the growth of discriminating diagnostic methods, including the invention and use of instruments of precision (which sometimes prove to be instruments of confusion), subdivisions of the surgical art have come about through exclusive attention paid to separate portions of the human body by intensively trained individuals. Undoubtedly these conditions have inured to the benefit of the profession and of the patients. It stands to reason that those who devote their full time to the study and practice of our so-called surgical specialties have opportunities of becoming more skilful and proficient in the management of certain diseases lying within their particular fields of work. The advance of knowledge, stimulated by experimentation and research, has been so rapid and so exhaustive that no one is able to encompass the entire gamut or to be accomplished in all the different spheres of surgery.

Nevertheless there may be a tendency to a narrowing of view, if the specialties are pursued to the point of minimizing surgical principles and omitting the proper period spent in preparation both for the science and the art of surgery. The ever-extending regions in which surgery may be applied offer no justification for entrance by those who are not qualified surgeons before they essay to specialize.

It is true that a course of training in diagnostic procedures, preliminary investigation and operative assistance in such spe-

cialties confers specific experience and familiarity. These qualifications are essential. Too often, however, those who receive this instruction have not had, and do not later acquire, proper training in surgery. Some who call themselves specialists and who, in the present order, are accepted upon their investigative and manipulative ability, find themselves handicapped in operative experience. The obvious lesson is that surgery is surgery, no matter in what part of the body it may be demanded, and that to pigeon-hole it does not permit disregard of its principles and practice.

The subdivision of surgery into its several specialties has limited the scope of the general surgeon. By one encroachment after another he has been deprived of his privilege to treat diseases of organs and regions, formerly his province, until his circuit is now restricted to a few ailments which the surgical specialist does not find to his liking or which for good reason he does not venture to treat. Let us survey these encroachments, examine their tendencies and determine the effect of their further progress.

The Neurosurgeon

Proceeding from top to bottom, the neurosurgeon heads the list. Primarily he was referred to as the brain surgeon; but that was before he took over the spinal cord and the peripheral nerves, and began to sever various branches of the sympathetic system. If he is not watched, will he eventually assume proprietorship over the tendons? Some of us devoutly hope so. Without question he is a necessary surgical specialist, since his

precinct is a sacred area not to be invaded by a tyro, and grateful we are that in most instances he has served an apprenticeship in general surgery. If he is his own neurologist, as were Victor Horsley and Harvey Cushing, so much the better; or if he can depend on a capable neuropathologist, as did Frazier upon Spiller, the results will be as happy. Our compliments are due the real surgeon who carries on in this highly alluring and increasingly attractive branch of the art.

The Thoracic Surgeon

Those who limit themselves to surgery of the chest must needs include all its contents—the lungs and their appendages, the esophagus, the heart, the great blood-vessels, and mediastinal tumors. It may be questionable whether or not intrathoracic goiter belongs in this category. For practical purposes, the thoracic surgeon has confined his attention largely to operations on the lungs, and this is the field in which his services are chiefly needed. Within comparatively recent years he has simplified the technique of invasion of the chest and widened the indications for its use. He deserves great credit for the surgical treatment of pulmonary tuberculosis and the successful removal of growths of the lung.

But can it be that he really believes that no one except a thoracic surgeon should operate on a patient with empyema of the thorax or even tap a pleural effusion? It is just to say that the "chest" surgeon has but recently evolved, and that he still regards himself as a general surgeon who apportions his extra skill to the thoracic cavity.

Before passing on to the other subdivisions it should be noted that the two specialists just considered still retain the title of surgeon, preceded by the name of the region denoting their special fields. Those that follow are known ordinarily by terms which do not imply a surgical designation.

The Gynecologist

Here we come to no parting of the ways; for the original gynecologists (even before the name was invented) were surgeons, who first intruded upon the lower female abdomen. From Ephraim McDowell, the earliest ovariologist, through Marion Sims, the father of Gynecology, on down to Battey, Emmet, Thomas, Nott, Penrose and many others, we observe that the leaders in this

specialty were, or had been, general surgeons. None of them regarded himself as an obstetrician. Sims was one of the first to operate on the gallbladder, and he successfully performed amputations, excisions and plastic operations, including those for hare-lip and cleft palate.

Leaving out the common pathologic growths which may affect the female pelvic organs, there are three essential sources of gynecologic disease: deformity, congenital or acquired; injury, largely resulting from childbirth; and infection, usually due to venereal disease and obstetrical sepsis. All of these are remediable only by surgical means. A deformity must be corrected, an injury repaired, and an infection removed. How else may these ends be obtained but by surgery?

If the gynecologist strays above the ileo-pectineal line (even in men) and snatches an offending appendix vermiformis, it may be only an effort to exhibit his surgical enthusiasm. There are gynecologists who, thinking possibly in terms of the old-time "diseases of women", consider the female breast as belonging in their bailiwick. Neither of these wanderings is beside the mark, if one who attempts them as a part of his own specialty is versed in the practice of surgery.

The as yet little understood subject of endocrinology requires no particular surgical propensity, and it does not appear that the ductless glands are solely in the domain of the gynecologist. Rather may endocrinology be regarded in the light of its original definition, "the science dealing with the internal secretions and their physiological and pathological relations." Does not this definition relegate the subject to the realm of medicine as a whole? Many gynecologists justify their adherence to endocrinology on the ground that the practitioners of internal medicine are neglectful of, and insufficiently versed in, the matter, especially in women. If, perchance, the internist had an equal option on the female population, he, too, might become a learned endocrinologist. Here is a reminder: men also have glands.

By and large, gynecologists of the present day consider themselves first as obstetricians, as signified by the abbreviated title, "ObG", after their names in the roster of specialists. Such a designation affords them an abundant opportunity of repairing their own obstetric

damage by surgical means. But the practice of obstetrics is improving, and the more efficient midwifery becomes, the less is the need for repairs. In order, therefore, to manage all phases of pelvic disease, the gynecologist must be an accomplished surgeon. It is well to remember that, outside the physiology and pathology of pregnancy, grouped under the term prenatal care, all other obstetric procedures are surgical in character.

The Urologist

This foreshortened title was formed for the purpose of including a multitude of specialists within a specialty. In its derivation a syllable has been omitted. The proper version should have been "urinologist", or, better, "uronologist" from the Greek word, "*ouron*" meaning urine; for one of the better medical dictionaries defines urology as follows: "The branch of medical science which has to do with the urine and its modifications in disease." Our largest urological organization takes in all those who practice this specialty, whether they be surgeons, diagnosticians, cystoscopists, or researchists. Many of its members are not surgeons, and, either by choice or necessity, perform no surgical operations whatever. Its constitution requires that its membership "shall be composed of physicians and surgeons, or other scientists who have contributed to the practice of this branch of medical science." There are now 1,193 members.

Yet the urologist generally considers himself a surgeon. He has pre-empted the bladder and the kidney and in addition is doing circumcisions, resecting the prostate gland, removing the testicle, amputating the penis and otherwise operating upon the reproductive organs, not to speak of his career as a syphilologist and a Neisserianist. He can qualify as a urologist if he is versed in the use of the cystoscope, whereby he may observe the interior of the bladder and perform the usual tests for kidney function, whether or not he actually executes any of the more formidable procedures in his specialty. It is no depreciation of his diagnostic skill or manipulative ability to deprive him of his operative career. Nor is it contended that facility in diagnostic methods unfits him for more extensive service, provided only that he has the talent and gains his needed experience from surgical training.

The original designation for one who practiced this specialty was genito-urinary surgeon. An association bearing this title, now in its fifty-sixth year, is one of our oldest and most exclusive professional organizations, limiting its fellowship of active members (under 60 years of age) to seventy-five. Altogether there are ninety-seven members at the present time. Established by general surgeons—or just surgeons—this association adopted, and has continued to be known by, a name which is all-inclusive, indicating a genuine surgical specialty and embracing whatever may be contained in the subject of urology. It would not be expedient or polite for us to set the line of demarcation or draw too fine a distinction between titles. The most striking anomaly exhibited by the members of these two organizations is that they treat both the genital and the urinary organs in the male, but only the urinary organs in the female. If they were too consistent, they might develop into gynecologists.

The Orthopedist

Far afield from its pristine conception of "straightening children" orthopedics long since has come to mean not only correction of deformities at any age, but also the treatment of acute and chronic diseases of the bones and joints, as well as that of all fractures and dislocations.

The orthopedist of the new generation prefers to be called a bone and joint surgeon. Welcome he is to this appellation, if he can live up to it. His consecration to the hard parts gives him assurance in handling the soft parts, as witness his attention to fractures of the skull, which are dangerous only so far as they involve the brain, and his predilection toward plastic surgery, including skin-grafting—exclusive conditions of the yielding tissues. Knowledge of osseous pathology surely must be shared with the so-called general surgeon, albeit the orthopedist feels free to indulge in amputations. Here restoration gives way to mutilation.

Happily our orthopedic colleagues have become acutely aware of their former status as plaster of paris specialists, and are taking their befitting places as true surgeons, carrying on in a realm suited to their instincts. That is a consummation devoutly to be wished.

The following questions naturally arise:

Does this widened opportunity give them their prevailing proclivity to fix all movable joints and to mobilize all fixed joints? And do they purposely fasten tightly, for long periods, the ends of all broken bones, often securing a perfect anatomical reduction, with too little regard for functional results? Is it always necessary to place plaster casts completely around a limb, instead of using a trough now and then? Is it always necessary to stabilize the neighboring joints both above and below a fracture? Is it always necessary to employ a cast for a Colles's fracture, and to keep it in position for several weeks? Without assuming that these methods represent the routine practice of every orthopedist, it may be remarked that the only possible reason for their existence is that prolonged fixation, besides affording occasion for technical artistry, furnishes occupation for the physical therapist to undo the damage produced by a slavish fidelity to overzealous mechanics. To prove the writer's respect for the real orthopedic surgeon it will be sufficient to repeat a remark he made when he attended an operative clinic by Sir Robert Jones in Liverpool, twenty-nine years ago. As this superb surgeon performed his operations with skill, speed and agility, going directly to the lesions, cutting here and manipulating there, finally adjusting his malleable metallic splints, with not a dab of plaster, the observer could not refrain from thinking and thus expressing himself, "Almost thou persuadest me to be an orthopedist."

The Ophthalmologist and the Otorhinolaryngologist

The ophthalmologist and the otorhinolaryngologist should be mentioned in any consideration of the surgical specialties. Much could be said of their qualifications and restrictions; for they represent a delicate finesse of the surgical art, and no one should enter these portals without a well-earned afflatus for the intricacies they afford. Even if we are wont to call them "peep-hole" surgeons, nevertheless they possess accurate instruments to do their peeping, and surgical training is the key-note of their calling.

Other Surgical Specialists

A recent and important department of surgery is embodied in the *industrial surgeon*, or, more specifically, he who specializes

in *traumatic surgery*. Justly this branch of our art is coming into its own and occupying an expanding field. Any name for it is satisfactory. What cannot be endured are the expressions, "traumatic wounds", "traumatic injuries" etc., for the word trauma means a wound or an injury, and the above titles, which constantly creep into the literature, constitute the veriest tautology. The *plastic surgeon*, as his distinction intimates, must be supple and pliant, economical of tissue, conservative in design. His art might well be called "patient surgery"; for the virtues of that adjective are sorely needed both on his own part and on that of his patients. Of the *proctologist* suffice it to say that, but for his pile-driving tactics, his dominion is the most contracting of all the surgical specialties, unless his ambition leads him above the sigmoid flexure.

If there are any other subdivisions which have been omitted, their names will be gratefully received. Those who have further suggestions to make, or believe there are other worlds to conquer, might be admonished that surgical competence should be added to, and not subtracted from them.

Finally and briefly, what is left for the general surgeon? He may be allowed to manage some head injuries, and to splice some peripheral nerves, which do not need the scientific scrutiny of the neurosurgeon; to evacuate pus from the chest by courtesy of the thoracic expert; to seize a female appendix and even to do a hysterectomy, if the gynecologist is willing; to remove a kidney which has escaped the wary hand of the urologist; to treat a few fractures and dislocations and to do an occasional amputation in defiance of the orthopedist.

But what of the procedures customarily granted the general surgeon? It may be admitted that surgery of the thyroid gland is in his domain, and yet at least one laryngologist has taken this organ for his own, because it involves the trachea. For the most part, operations for hernia naturally fall into the lap of the surgeon, with reservations. None but his nimble fingers need apply for the complicated maneuvers of vascular surgery, the mastery of which is a supreme test of his skill. There remains a region which is not attacked with impunity by the subdivided specialist—the upper abdomen, which harbors the stomach, the liver, the gallbladder and its ducts, the pan-

creas, the spleen, the small intestine throughout its ramifications and, reaching still further below, the colon in its entirety. Operations upon these organs, by common consent, seem to be surrendered to the general surgeon, who comes by them honestly, though by default. The arena of the surgeon, therefore, ceases to be general and becomes very particular, leaving him as the most special of the surgical specialists. Any superiority which he may assume will be instantly suppressed by the definition of a chemical doctor of philosophy (Meeker): "A general surgeon is one who does not do any one thing particularly well." But it is his commission to perform, with becoming grace, such difficult and dangerous procedures as are now vouchsafed him, thankful that he is broad-minded enough to claim kinship with all those who are dedicated to the science and art of surgery.

Summary

In this somewhat facetious, if earnest, review of the relation of the surgical specialties to general surgery, the intention has been, not to ridicule, but to pay deference to, the several subdivisions of surgical practice. The effort to delineate their confines, by comparison and contrast, supports firmly the conviction that, although we are engaged in diversified pursuits, the wholehearted attachment of us all is to the profession of surgery. And be it remembered, 'tis not all of surgery to cut, nor all of operating to recover from an operation. Surgical processes may be topical, manipulative, mechanical or operative. Each one of us may stand up and paraphrase the ancient adage: *Chirurgus sum*—I am a surgeon; I count nothing surgical indifferent to me.

There are men of our profession in every large community who don't read, whose profession is a cow to be milked, and who just set. There is no mental embryology in such minds; they are as sterile as any teapot.—Pittfield, R. L.: *The Medical Mind*, 1909.

This is known and spoken of along the coast of Virginia, that the old sailors years ago preferred the water of the central lake in the Great Dismal Swamp for their stock of drinking water when starting on a long voyage. They found that their crews remained free of disease for longer periods than if well water were used. This water, brown with vegetable extractives, no doubt, contained appreciable quantities of vitamins.—*The Mississippi Doctor*, 20: 94 (July) 1942.

A BRIEF DISCUSSION OF BRONCHIECTASIS

M. D. BONNER, M. D.

JAMESTOWN

Bronchiectasis is a condition of bronchial dilatation, the etiology of which is still controversial. Its incidence is not appreciated and its high mortality rate is most alarming.

In the last three years at the Guilford County Sanatorium we have examined 1,841 adult whites, and 389 Negroes in our diagnostic clinic. Sixty-five cases of bronchiectasis and 157 cases of adult type pulmonary tuberculosis were found in the white group. This is almost half as many cases of bronchiectasis as of tuberculosis. In the Negro group, there were 10 cases of bronchiectasis and 128 cases of tuberculosis—a ratio of a little less than one to ten. The incidence of both diseases is high in this group. Ninety-five per cent or more of our cases, however, are referred by practicing physicians because of symptoms or signs of intrapulmonary disease. Only cases definitely proved to be bronchiectasis by iodized oil injections and x-ray are listed, and only those patients with obvious or highly suspicious evidence of bronchiectasis were given injections.

Perry and King⁽¹⁾ reported on 400 cases of bronchiectasis seen at the Massachusetts General Hospital between 1926 and 1938 inclusive. Of the 260 patients treated non-surgically, 26 per cent were known to be dead in January, 1939, and 19 per cent were not traced. The authors concluded that patients developing bronchiectasis before the age of 10 do not often live beyond the age of 40. Of their patients with onsets in the first decade, only 9.4 per cent were living at the age of 40 or over. Of the 59 patients who reached the age of 40 or over, only 15 per cent had the onset of their disease in the first decade.

Bradshaw, Putney, and Clerf⁽²⁾ reported in June, 1941, a 34.5 per cent mortality in

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1. Perry, Kenneth, M. A. and King, Donald S.: Bronchiectasis: A Study of Prognosis, Based on a Followup of 400 Patients, *Am. Rev. of Tuberc.* 41:531-548 (May) 1940.
2. Bradshaw, Howard H.; Putney, Floyd J.; and Clerf, Louis H.: The Fate of Patients with Untreated Bronchiectasis, *J.A.M.A.* 116:2561-2563 (June 7) 1941.

171 cases admitted to the Jefferson Hospital between 1925 and 1935. They also stated that the average duration of life in the dead patients from the onset of symptoms was thirteen and one half years, but only one and eight tenth years from the date of diagnosis.

This high mortality rate is by no means all of the picture. Bronchiectasis is a disease of childhood and early life and exerts its influence on the mind as well as the body of the individual at the time when the personality is being developed and fixed, when social contacts are being made, and foundations for the future are laid. This is an important period, and the patient with a profuse, foul smelling sputum does not have a chance. He is usually a social outcast. Even the very mild case has, as a rule, foul breath on intimate contact. The toxemia from the infection and the low grade anoxemia produce a chronic fatigue which has a vicious effect on the patient's social and psychological development. These people often avoid social gatherings and seldom take part in any extracurricular activities.

A disease that has such dreadful results certainly deserves more consideration than we have been giving it. I fear that in the past we have not looked for these cases carefully enough, or treated them diligently or radically enough once they were found.

The treatment of a disease is governed, as a rule, by one or more of the following factors: etiology, pathogenesis, pathology, symptoms, and complications.

Etiology

The etiology is still controversial, but it seems safe to assume that infection of the bronchial wall and subsequent fibrosis and distortion play the important role.

It is a constant observation, that the bronchi serving atelectatic areas of the lung become dilated. This is not a pathological dilatation, but is a normal response to the physical state produced; and if the atelectasis is relieved before structural changes have occurred, the bronchi will return to normal. If the atelectasis continues for a long time or is frequent, infection and fibrosis of the bronchial wall are inevitable. This concept of the development of bronchiectasis is sensible, and is certainly a happy one, since it gives us hopes of prevention.

Pathology

The pathology of the disease is well known and will not be discussed in detail. It seems enough to recall here that the main features are varying degrees of dilatation of the lumen with modification or destruction of the mucous membrane, and reduction or loss of elastic tissue with replacement by varying amounts of fibrous tissue. In some cases we can see no great structural changes in the lobes. The bronchi are dilated as shown by injection, but they are in fairly normal relationship to one another and to the thorax. Other cases may show one or more lobes contracted and airless, with varying degrees of infection. It is obvious that symptoms and complications depend almost entirely on the degree of these changes.

Symptoms

There may be no symptoms, or symptoms ranging from a very small hemorrhage to the severe toxemia of the grossly infected case. Most patients present themselves because of symptoms. In the mild or early case the patient complains of frequent or continuous respiratory infection, especially in the winter months. Cough is prominent and is usually productive. Later, fatigue and poor appetite are complaints. There may be a history of similar symptoms at intervals, dating back to one of the infectious diseases of childhood, especially measles, whooping cough, or pneumonia, and particularly recurring pneumonia. The more advanced case will have varying degrees of constitutional disturbance, such as loss of weight, clubbing fingers, frequent febrile attacks, leukocytosis, paranasal sinusitis, and increased sedimentation rate. The amount and type of sputum may vary from an ounce or less of mucopurulent secretion to many ounces of very foul pus. Pulmonary hemorrhage is a very frequent complication and is quite copious at times, but is seldom fatal. Pneumonia, empyema, pulmonary gangrene or abscess, septicemia, and brain abscess are often the cause of death.

Prevention

Preventing a disease as disagreeable and fatal as we now know bronchiectasis to be is certainly to be preferred to treating it. Accepting the theory that disturbance in the self-cleansing capacity of the lung or impairment of local pulmonary ventilation may lead

to atelectasis and thereby set the stage for the development of bronchiectasis, we have a sound basis for means of prevention. Correct breathing would seem to be fundamental, and anything interfering with normal respiration should be corrected. In acute respiratory infections, especially in children, be sure that the dependent portions of the lung do not become blocked by secretions; encourage bronchial drainage by change of position. In frequently recurring respiratory infection, rule out allergy as a predisposing cause. Watson and Kibler⁽³⁾ of Tucson state that in fully 90 per cent of their cases a diagnosis of allergy may be made on the evidence found. No one else has ever reported such a high figure. Less than 20 per cent of the very few cases we have skin tested are found to be allergic.

Bronchial obstruction from stenosis, foreign body, or swollen mucous membrane must be relieved as soon as possible. Abdominal diseases, operations, chest injuries—in short anything that tends to produce atelectasis or reduce the ventilation of the lungs—may predispose to bronchiectasis if complete aeration is not restored.

Treatment

Once the disease has developed, this concept of keeping the airways open is the basis of all medical treatment, and if this cannot be done, medical treatment is of no avail. Fortunately after the disease is established, it is infrequent that the disease *per se* progresses; the number and distribution of the dilated bronchi remain the same. Unfortunately, however, the damage to the individual bronchi and the lobe or segment of the lobe containing them, can and usually does, progress. Preventing or stopping this progression is the only hope of medical treatment, since it is generally understood that no well developed case of bronchiectasis has ever been anatomically cured by any form of medical care.

Intelligent treatment of any case requires knowledge of the extent and location of the ectatic bronchi. This information can be accurately obtained only by some contrast medium in all the bronchi of each lobe. Iodized oil is commonly used, and there are a number of methods of injecting it. Once the ectatic bronchi are located, positions for

postural drainage can be planned. The treatment of individual cases may vary from five or ten minutes of postural drainage once or twice a day, to continuous day and night drainage in bed. Any infections in the sinuses, tonsils or teeth that may drain into the bronchi must be corrected if possible. Cough mixtures containing deodorants, sedatives, or expectorants may be used. If there are only a few ectatic areas located well for drainage and no gross infection and fibrosis of the surrounding lung tissue, it is likely that the patient can be carried indefinitely on medical care and the bronchi kept dry. Good drainage is the important thing. The more extensive the disease, or the more grossly infected the surrounding lung, the less effective is medical treatment.

Bronchial irrigations and bronchoscopic aspirations are palliative medical measures; they never cure. Patients with alarming constitutional symptoms and with extensive disease will usually show marked improvement following this medical regimen, but this gain in most cases is not permanent. One important reason for this, at least in the cases I see, is that not one patient in ten will practice his postural drainage diligently day after day. Even if he does, however, the advanced case rarely becomes dry, because of the distortion of the bronchi and the gross infection and fibrosis of the lung tissue between them. Complete drainage here is impossible. In those cases with very foul smelling sputum and with evidence of distortion and contraction of the involved lobe, surgery is imperative.

Thoracic surgery has improved more in the last few years than any other type of operative treatment. Lobectomies and pneumonectomies have become commonplace, and in the last two or three years the mortality rate has been surprisingly low. Churchill⁽⁴⁾ of Boston, as far back as 1937, reported a mortality rate of 6.1 per cent for 49 patients in whom lobectomy or total pneumonectomy for bronchiectasis or cystic disease was undertaken, and a 2.6 per cent rate for 38 of these patients on whom an improved type of lobectomy was performed. He also stated that in the last 30 successive cases, including one in which the middle right as well as the lower left lobe was removed, there was not a fatality.

3. Watson, S. H., and Kibler, C. S.: Bronchiectasis: A New Conception of Its Etiology Which Makes Prevention and Recovery Possible, J.A.M.A. 111:304-305 (July 30) 1938.

4. Churchill, Edward D.: Lobectomy and Pneumonectomy in Bronchiectasis and Cystic Disease, J. Thoracic Surg. 6:286-311 (Feb.) 1927.

Perry and King⁽¹⁾, in May, 1940, report an operative mortality of 3.3 per cent in 122 modern type lobectomies performed on 116 patients.

Overholt⁽⁵⁾ has performed 70 or 80 lobectomies in bronchiectasis with a mortality rate of 7.5 per cent. He has performed pneumonectomies for extensive bronchiectasis or pulmonary suppurations in 20 patients with 1 operative death.

Bradshaw⁽⁶⁾ has a mortality rate of 5 per cent.

These are truly remarkable results and should tend to allay the fear that some of us have had of intrathoracic surgery. It is probably true that the best risks were selected for surgery. However, 50 per cent of the non-surgically treated cases in their series had unilateral disease and 75 per cent were anatomically suitable for surgery. There seems little doubt in the minds of the men interested in this subject that surgery is the treatment of choice in bronchiectasis.

We feel that any patient under 30 should have a complete study, and if constitutional symptoms are present, or have ever been severe, especially if sputum is foul, and if the disease is anatomically suitable, surgery should be seriously considered. We are probably safe to temporize when symptoms are mild and the extent of the disease is slight, especially when drainage is apt to remain good. We will be forced to use palliative measures in the anatomically extensive and in the older age groups. Technical improvement in operative procedures will probably reduce the number remaining in this group.

Recurrent pulmonary hemorrhage, if severe; recurrent febrile attacks, especially with exacerbation of chest symptoms; foul sputum; and severe constitutional disturbance are listed as indications for surgery. None of these, with the exception possibly of foul sputum, takes into consideration the psychological effect of the disease. This, in my opinion, should come first in any list of indications. If the disease is interfering with the normal physical or psychological development of a child, or with the social or economic status of an adult, the disease should be permanently removed if possible.

5. Overholt, Richard H.: Personal Communication, March, 1942.

6. Bradshaw, Howard H.: Personal Communication, April, 1942.

Abstract of Discussion

Dr. McNeill: Bronchiectasis seems to me to be one of the hardest of all diseases to diagnose accurately. You can't do it by physical examination or by straight x-ray films. I would appreciate it if Dr. Bonner would describe in more detail his method of injecting iodized oil, and tell us what position he puts the patient in to get his pictures.

Dr. L. C. Todd: This presentation of Dr. Bonner's is valuable and timely. I was particularly interested in his mentioning the importance of correcting the hygienic factors in young children. We have had the opportunity to follow young children with bronchiectasis through their development period of some ten years, and with the assistance of the nose and throat men we have checked the bronchi at intervals. I think that the outlook is not as hopeless as it is ordinarily made to appear. I should like to hear from Dr. Bonner something more about the outlook in the young individual who has a relatively early bronchiectasis. The allergic control in this type of patient is extremely important during early life.

Dr. Bonner: Dr. McNeill asked for a description of the technique for injecting iodized oil, and positions for taking the x-rays. We use a 5 per cent cocaine solution to anesthetize the pharynx and larynx. A small rubber tube connected to a 20 cc. syringe filled with oil is placed over the back of the tongue; the oil is instilled slowly and allowed to run into the trachea. The position of the patient depends on the lobe or lobes one wishes to outline. The upper lobe bronchus branches off laterally from the main stem and to fill this the patient must be leaned to the right or left, as the case may be, at about a 40 degree angle. The oil enters the main stem bronchus and drops off laterally into the upper lobe. To outline the right middle lobe the patient may be brought forward and slightly to the right at about 35 to 40 degree angle, since as you know the middle lobe bronchus comes off anteriorly. The lower lobes can be filled by leaning the patients to one side and slightly backward. In small children where good cooperation cannot be expected I prefer passing the bronchoscope and instilling the oil directly into the bronchus. Some men prefer injecting the oil through a short, small needle that has been inserted into the trachea just below the larynx. I have never used this method.

We routinely examine our patients by fluoroscope before the x-rays are made and inform the technician which position will be desired in making the films. If routine x-ray films are to be made flat-posterior-anterior and lateral views would be the position of choice.

The question of allergy brought up by Dr. Todd is a very important one in suppurative disease of the lung. This subject is very ably discussed by Drs. Diamond and Van Loon in an article published in the *Journal of the American Medical Association* for March 7, 1942 (p. 771-778). We often see children who are raising purulent sputum and who have pneumonic areas in their lungs who fail to show any bronchiectasis. We have found that a majority of these children are highly allergic and improve on antigenic therapy.

The life expectancy of children with bronchiectasis is not very good; not more than 10 per cent will be alive at 40 according to King and Perry. Their existence is certainly not a healthy or happy one.

BLEEDING ASSOCIATED WITH INTRA-UTERINE DEATH OF THE FETUS

FRANK R. LOCK, M. D.

WINSTON-SALEM

Intrapartum death of the fetus is one of the trying obstetrical problems which must be faced by the obstetrician and by the general practitioner. The diagnosis of simple pregnancy is not always easy, and when the necessity of determining death of the ovum arises, we are frequently faced with one of the most difficult of diagnoses. The importance of accurate diagnosis cannot be over-emphasized, since therapeutic measures hinge upon the interpretation of our findings.

The title of this paper is somewhat misleading, since it implies consideration of a very small and relatively unimportant part of this serious condition. However, I shall attempt to summarize briefly the present status of the diagnosis and practical management of antenatal death of the fetus. The classical constitutional symptoms listed by Litzenberg, DeLee, Williams and others are the rarest exceptions rather than the rule. These symptoms—malaise, anorexia, headache, loss of weight, chilliness, tachycardia, foul taste, bearing down sensations, and increasing invalidism—are almost never present, and are usually the result of infection. Constitutional symptoms traceable to fetal death alone were conspicuously absent in the series of about 200 such cases reported by Horner⁽¹⁾. For the purposes of discussion intrapartum fetal deaths may be conveniently divided into two groups: those which occur from conception until quickening, and those which occur from quickening until term. Because of time limits we shall consider only the former group in this paper.

In uterine pregnancy death of the fetus is usually followed by labor and expulsion of the products before a clinical diagnosis is made. However, the investigations of Mall⁽²⁾ and Streeter and his co-workers⁽³⁾ have shown that the aborted fetus is usually six

weeks younger than the menstrual age would indicate. Hence, it seems probable that the fetus usually dies six weeks before it is aborted. Mall also brought out another important point, which was further elaborated by Streeter and his colleagues: that most abortions are due to death of the fetus, and that this death is due to defective germ plasm. Streeter has emphasized the fact that defective germ plasm cannot be determined microscopically. These studies and those by other investigators have led to rather wide acceptance of the belief that 40 per cent of all spontaneous abortions are due to defective germ plasm. However, there is good evidence that 15 per cent is a much more accurate figure. Collins⁽⁴⁾, Falls⁽⁵⁾, and numerous others have reported representative series of patients adequately treated for threatened and habitual abortion, in which 85 per cent salvage has been the rule. The negligible incidence of congenital abnormalities in these cases would indicate that defective germ plasm results in early death of the fetus, with inevitable abortion. Expulsion of the products of conception usually follows death of the embryo or fetus within six weeks; however, they may be retained until all original symptoms are forgotten, even as long as sixty years.⁽⁶⁾

Many workers⁽⁶⁾ have shown a correlation between a reduction in the basal metabolic rate and all types of menstrual irregularities, sterility and abortion. Taussig⁽⁷⁾ sums up this phase of the problem by his statement that the time to start treatment of all types of spontaneous abortion is before conception has occurred.

This carries us into the immediate problem of intrapartum fetal death. The diagnosis of pregnancy must ordinarily precede any attempt to diagnose embryonic death. Fortunately, the diagnosis of pregnancy is usually relatively simple; the classical syn-

3. Streeter, George L.: Focal Deficiencies in Fetal Tissue and Their Relation to Intra-Uterine Amputation. Contribution to Embryology, No. 126, Carnegie Institute of Washington, 1930.

4. Collins, C. G.; Weed, J. C.; and Collins, J. H.: Treatment of Spontaneous, Threatened, or Habitual Abortion, Surg., Gynec. & Obst. 70:783-786 (April) 1940.

5. Falls, F. H.: Use of Progesterin in Obstetrical Complications, Illinois M. J. 77:180-185 (Feb.) 1940.

6. (a) Litzenberg, J. C.: Endocrines in Relation to Sterility and Abortion, J. A. M. A. 109:1871-1873 (Dec. 1) 1937.

(b) King, E. L., and Herring, J. S.: Hypothyroidism in Causation of Abortion, J. A. M. A. 113:1300-1302 (Sept. 30) 1939.

(c) Litzenberg, J. C., and Carey, J. B.: Relation of Basal Metabolism to Gestation, Am. J. Obst. & Gynec. 17: 550-552 (April) 1929.

7. Taussig, in Discussion of King and Herring (6b).

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From the Department of Obstetrics and Gynecology of the Bowman Gray School of Medicine of Wake Forest College.

1. Horner, D. A.: Antepartum Fetal Death, Am. J. Obst. & Gynec. 32:67-75 (July) 1936.

2. Mall, F. P.: A Contribution to the Study of the Pathology of Early Embryos, Johns Hopkins Hosp. Reports 9:1, 1900.

drome is amenorrhea, nausea, vomiting, soreness of the breasts and the presence of colostrum. When the Aschheim-Zondek or Friedman test is confirmatory an absolute diagnosis may be made. A palpably enlarged uterus is usually not found in very early pregnancy, but certain objective signs may be present. Until the time of quickening our principal interest must be in whether or not there are any changes in these subjective and objective symptoms. This presupposes measurement of the height of the fundus with calipers or tape and careful questioning of each patient at every prenatal visit. Prenatal visits, to be of full value to us in following the course of the patient's pregnancy, should be spaced at intervals not greater than three weeks. These visits are an increasing problem for the duration of the "national emergency", with strict limitations on the amount of driving each person is permitted.

We should be warned by a change in the symptoms of pregnancy, particularly when the change is sudden. Whenever bleeding occurs, and especially when it is associated with a change in subjective symptoms, the diagnosis of fetal death must be seriously considered. Simple bleeding without other symptoms, except moderate pain, is the common picture in threatened abortion.

A reliable objective indication of death of the fetus is failure of the uterus to grow. At times it may become smaller. The physician must be careful not to be misled by growth of the uterus resulting from molar degeneration.

In missed abortion it is probable that death of the fetus has occurred six weeks prior to the onset of hemorrhage. Commonly the slight bleeding which may accompany the death of the fetus is not noted by the patient, or is determined only by careful questioning. The Aschheim-Zondek test usually becomes negative upon death of the fetus. The change from a positive to a negative test is of utmost significance, and when secondary reversal to a positive test occurs we are obliged to interpret the finding as significant of *molar degeneration* of the products of conception, and to take definite steps to empty the uterus from below. Gentle dilation of the cervix with evacuation of the cavity by the finger of the gloved hand is usually the method of choice for removing a hydatidiform mole. Correct evaluation of the problem at hand will prevent unfortunate

accidents. Rupture of the uterus, profuse hemorrhage, shock and fulminating infection are frequent sequelae, and we must make every effort to avoid them. The possibility of chorionepithelioma must be considered and follow-up studies carried out for eighteen months or longer with quantitative chorionic gonadotropin tests.

The management of "missed abortion" should be conservative. The patient usually goes for many months without symptoms, and will usually cooperate fully when clearly informed of the hazards of useless intervention. In cases of missed abortion the uterus is usually unresponsive to medical induction. Reports by Robinson, Datnow, and Jeffcoate⁽⁵⁾ indicate that estrogenic substances may be used to increase the responsiveness of the uterus to medical induction. Abarbonel used stilbestrol in doses of 10 mg. every hour for ten to fifteen hours before the usual medical induction was started.

Operative intervention in cases of missed abortion is rarely indicated. If medical induction fails, the patient should be warned against the use of douches, against intercourse, and against any measures which would tend to introduce infection into the uterus, and should await a spontaneous termination. Operative intervention should never be carried out except under the best of conditions, in a well-equipped operating room with preparations made for the transfusion of large amounts of blood. Because of the usual size of the fetus and firmness of the cervix, vaginal hysterotomy is often the most conservative manner of emptying the uterus.

Summary

1. The fact that the fetus usually dies about six weeks before it is aborted is indicated by the work of Mall⁽²⁾ and Streeter⁽³⁾, who compared the embryological age of a large group of aborted fetuses with the menstrual age. However, in some instances the products of conception may be retained many years after the death of the fetus.

2. Recent studies of Collins⁽⁴⁾, Falls⁽⁵⁾, and others, which indicate that they are able by adequate treatment to prevent 85 per cent of threatened abortions, suggests that only about 15 per cent of abortions are due to defective germ plasm.

3. The correct diagnosis of antenatal

5. Robinson, A. L.; Datnow, M. M.; and Jeffcoate, T. N. A.: Induction of Abortion and Labour by Means of Oestrin, Brit. M. J. 1:740-758 (April 18) 1935.

death is based on changes in the subjective and objective signs of normal pregnancy, especially sudden changes. One of the most important signs is failure of the uterus to increase in size, or a decrease in the size of the uterus, and another is reversal of the Aschheim-Zondek or Friedman test. The subjective classical symptoms of antenatal death of the fetus are rarely present, and if present usually indicate infection.

4. The possible association of hydatidiform mole and chorionepithelioma with antenatal death must be kept in mind.

5. Operative intervention in cases of missed abortion is rarely indicated. The use of estrogenic substances to increase the responsiveness of the uterus to medical induction is reported to be of value.

THREATENED ABORTION

RICHARD B. DUNN, M. D.

GREENSBORO

Few of us realize the importance of abortion when we think of the conservation of human resources. Taussig estimates that about 600,000-700,000 abortions occur yearly in the United States. About 30 per cent of this number are spontaneous, and possibly preventable. Today we are discussing this 30 per cent group, and the ways and means of reducing it. Unfortunately we can do nothing about the other 70 per cent, which are criminally induced. It has also been estimated from a large series of cases that approximately one in ten pregnancies ends in a spontaneous abortion, usually during the first three months.

The older obstetrical textbooks usually list the causes of spontaneous abortion in the following order:

1. Retrodisplacement
2. Fibroids
3. Cervical lacerations
4. Syphilis
5. Infections
6. Defective germ plasm
7. Defective implantation of the ovum
8. Endocrine imbalance
9. Dietary deficiencies

In the past five years more and more recognition has been given to the last two factors, and most investigators now place them at the head of the list. My estimate would be that endocrine imbalance and dietary deficiencies account for about 80 per cent of spontaneous abortions. Because of the importance of these factors, this brief paper will be devoted to a discussion of their treatment.

First, however, it is necessary to dispel one fear which is rather prevalent. Many physicians believe that in preventing a threatened abortion they may be permitting the birth of a defective child. In a series of cases collected by Greenhill and Shute only 2 per cent of the children born after the prevention of a threatened abortion were deformed, whereas Mall estimates that 2.5 per cent of normal pregnancies produce deformities or monsters. These figures suggest that glandular and vitamin therapy might reduce the incidence of deformities, rather than increase it.

One should always keep in mind the possibility of a threatened abortion. Continual cramp-like sensations similar to menstrual pains, or very slight bleeding without cramps is sufficient cause to start the patient on treatment. If there is a history of previous spontaneous miscarriages, one should anticipate the threatening signs rather than wait for them to occur. Of course, when actual uterine contractions and profuse flow occur, the diagnosis is simple; even this late, however, therapy is sometimes effectual. A patient I saw last year bled for seven days more profusely than with her regular menstruation; yet the pregnancy was carried to term.

The treatment for threatened abortion has become fairly well standardized. The first factor is rest in bed, usually with bathroom privileges.

The second factor is thyroid extract in doses of $\frac{1}{4}$ grain to 2 grains daily. This is indicated if there is a low basal metabolism, a slow pulse, sluggishness, low blood pressure or obesity. It is generally agreed that of the glandular substances used in threatened abortions, thyroid extract is the most important.

The third factor is progesterone therapy. The corpus luteum extract available several years ago was so weak that it was practically ineffectual. When bleeding and uterine

contractions are present 5 to 10 mg. of progesterone daily are required. After these symptoms subside 1 mg. once or twice a week is recommended. Recently an orally effective progestational hormone has been used successfully in 10 mg. doses twice daily. Anterior pituitary, and anterior-pituitary-like (chorionic gonadotropin) substances theoretically stimulate the corpus luteum to produce more progesterone. Most of us would rather use the progesterone than the indirect therapy.

The fourth factor is vitamin E. It is still not known exactly how vitamin E deficiency causes abortion, but we know that if it is not present in adequate amounts in the diet of animals, abortion will occur. It is always used prophylactically in cases of habitual abortion. Recent studies have indicated that vitamin C is also important; so it is advisable to use some good polyvitamin preparation.

Under such a regimen as that outlined above, a large percentage of patients with threatened abortion will recover and go to full term. Too hasty dilatation and curettage cause the death of many living embryos. No harm is done by giving the patient every chance to retain the developing fetus. Therefore, every reasonable treatment should be tried to prevent a threatened abortion from becoming inevitable.

Abstract of Discussion

Dr. Bradford (Charlotte): I agree that these cases of threatened abortion are worth fighting for. There is a great deal of disagreement on that point; many think that it is a mistake, economically as well as physically, to try to prevent abortion in patients who are bleeding in early pregnancy. However, evidence is piling up which shows that many of these patients can be delivered of normal babies. Many patients in our own practice, known to be habitual aborters, have produced normal, healthy offspring under treatment similar to that which Dr. Dunn has outlined, with progesterone and vitamin E.

I have been worried with the high incidence of placenta praevia in pregnancies that we are not able to carry to term or near term.

Dr. Charles H. Mauzy, Jr. (Winston-Salem): I question the value of progesterone in preventing abortions. Some recent work by Biggers and Richards shows that it does not inhibit uterine contractions. Personally, I think that thyroid extract is our best means of treatment, and I believe that the other measures are of very little value.

Dr. Oren Moore (Charlotte): It has been said from time to time that nobody bleeds to death from an abortion, but I have the records of five women who have bled to death.

I looked up the records of 89 patients with abortions admitted to a Charlotte hospital in 1941. In all cases curettage was done as soon as they got

in the hospital. The average stay in the hospital was three days. There were only 6 patients who ran any fever or showed any symptoms after the uterus was emptied. Out of the 89 there were only 6 cases that were supposed to have had a criminal origin.

Dr. James B. Lounsbury (Wilmington): How can one determine if the pregnancy is maintained in a threatened abortion where you are not sure whether or not the patient has passed clots? I should also like to ask how long Dr. Dunn keeps the patient in bed after the bleeding has stopped.

Dr. Slate (High Point): I would like to know how the skin test for pregnancy compares with the Aschheim-Zondek or other nationally known tests.

Dr. Dunn: Dr. Mauzy says that progesterone is no good. Perhaps it isn't. I don't know of any exact proof either way. All I know is that the majority of the clinics and research centers use it, and good results are reported. I should like for Dr. Grollman to give us his opinion.

I believe that thyroid and progesterone are efficacious, given together. That, too, has not been proven. Certainly thyroid is tremendously important. I believe it will act just as well with progesterone as without.

As to Dr. Lounsbury's question about how to tell when a threatened abortion becomes inevitable, I believe that is the crux of the whole problem. It is a very difficult decision to make. The point I was trying to make is that we should not be too hasty in considering abortion inevitable in a patient who is bleeding and having uterine cramps. Often abortion can be prevented. I am sure all of you who are delivering babies will know of many patients who bled sporadically throughout the whole pregnancy. If every time a patient bled a little we treated it as an inevitable abortion, we would lose many fine children.

If a woman is bleeding less than her normal menstrual flow, I classify it as a threatened abortion. If her cramps are of a mild nature, not more severe than her normal menstrual cramps, I still consider it a threatened abortion. When the cramps are in the nature of miniature labor pains, with a profuse flow, then I consider an abortion inevitable.

The question of how long a patient should stay in bed after bleeding has ceased is a matter on which physicians differ. I believe that two or three days is adequate. Many doctors will say a week or more.

I do not know anything about the skin test for pregnancy.

Dr. E. W. Franklin, Chairman (Charlotte): I would like to ask Dr. Grollman if he will answer the question on progesterone.

Dr. Arthur Grollman (Winston-Salem): One would not expect progesterone to be of value in all cases of abortion; the primary cause of the abortion will determine its possible value.

Obviously in a case of placenta praevia or defect in the embryo, the administration of progesterone will be futile. It is only in the case of abortion due to failure of the corpus luteum to produce an adequate amount of the progestational hormone that replacement therapy can be expected to be of value. That such failure occurs in any given case must be adequately demonstrated before one can utilize progesterone rationally.

In any case, the earlier claims of excellent results following the use of 1 mg. doses of progesterone must be viewed with skepticism. Animal experiments indicate that doses of at least 10 to 25 mg. would be needed to elicit a response in the human female.

The use of desiccated thyroid in many gynecological conditions is based for the most part on purely clinical impressions and on rather meager objective evidence. The promiscuous use of desiccated thyroid is certainly to be deprecated.

In answer to Dr. Slate's query as to the value of the colostrum cutaneous test for the diagnosis of pregnancy, a report by Goldman, Kessler and Wilder in the *Journal of the American Medical Association* for May 9, 1942, shows that the test is only 70 per cent accurate. Since we possess in the Aschheim-Zondek and Friedman procedures a technique of high accuracy, it would be unwise to displace them by less accurate methods.

In applying the pregnancy test to patients suspected of an incomplete abortion, a quantitative determination is essential for determining the exact status of the condition.

IMMEDIATE POSTOPERATIVE FEEDING IN ABDOMINAL SURGERY

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RALEIGH

One of the most frequent complications following abdominal operations is abdominal distention. The patient is uncomfortable, at times apprehensive, and there is danger of progression to paralytic ileus. Less important to the surgeon, but always expected by the patients, are "gas pains".

It is recognized that intestinal manipulation, abdominal trauma, and anesthesia combine to upset normal intestinal activity. If the operation is long and arduous, if peritonitis is present, or if there is intraperitoneal hemorrhage, then more distention is anticipated. Such conditions cause intestinal paresis, which leads to intestinal distention, and the end result may be a true paralytic ileus. If such a chain of events can be prevented before a vicious circle has set in, discomfiture of the patient and danger of further damage may be obviated.

Preoperative preparation has changed markedly during the past few years. No longer do patients reach the operating room purged and dehydrated. More attention is now paid to the nutritional status, and as a result convalescence is usually hastened. However, so far few changes have been made in postoperative therapy. It is the purpose of this paper to review the origins of intestinal gases and to suggest certain minor postoperative procedures that may prevent distention and discomfort following operations not involving resections of the gastro-

intestinal tract. The routine is not original, although few papers have appeared on this subject.

Sources of Intestinal Gases

An understanding of the origin of intestinal gases is imperative if means of avoiding them are to be found. McIver and his co-workers⁽¹⁾ stated that intestinal gases occur from three different sources: (a) decomposition of intestinal contents, (b) diffusion of blood gases into the intestinal lumen, and (c) atmospheric air admitted by swallowing.

(a) Carbon dioxide is produced in large amounts from intestinal contents, especially in the upper portion of the gastro-intestinal tract. Hydrogen sulfide, methane, hydrogen, and oxygen are produced in like manner. Several workers found that hydrogen, methane, and nitrogen compose from 70 to 90 per cent of the gaseous fraction of orange juice, egg, milk, and custards⁽²⁾. Mahoney feels that further gas formation occurs from the action of bacteria in the lower intestinal tract⁽³⁾, and that such bacteria flourish if starvation inhibits the secretion of pancreatic, hepatic, and intestinal juices.

(b) Diffusion of blood gases accounts for small amounts of intestinal gases during normal intestinal activity. However, this diffusion occurs much more rapidly when there is an increase in the fluid content or circumference of the bowel, for at such times gases pour into the intestines until an equilibrium of tensions is reached.

(c) Atmospheric air was found to be an important source of intestinal gas^(1a). It is especially increased following inhalation anesthesia, fluid ingestion, or nausea. In experimental peritonitis a large amount of atmospheric air is found in the distended loops.

Elimination of Intestinal Gases

Once gases have collected within the intestines, elimination may occur by three routes: (a) Peristalsis, (b) eructation, limited to the stomach, and (c) absorption through capillaries of the intestinal mucosa.

- (a) McIver, M. A.; Benedict, E. B.; and Cline, J. W. Jr.: Postoperative Gaseous Distention of the Intestine, *Arch. Surg.* 13:588-604 (Oct.) 1926.
- (b) McIver, M. A.; Redfield, A. C.; and Benedict, E. B.: Gaseous Exchange Between the Blood and the Lumen of the Stomach and Intestines, *Am. J. Physiol.* 76:92-111 (March) 1926.
- (c) Fine, J. and Levenson, W. S.: Effect of Foods on Postoperative Distention, *Am. J. Surg.* 21:184-203 (Aug.) 1933.
- Mahoney, L. E.: Prevention of Gas Pains, *Am. J. Surg.* 22:272-276 (May) 1936.

(a) Peristalsis must be present to push the collected gases down to the rectum, where they may be expelled. Air swallowed into the stomach causes a peristaltic wave to be set up which passes on down through the small intestine.

(b) Gastric gases may be expelled by eructation with relief of symptoms.

(c) Absorption through the vascular system is rapid for carbon dioxide, hydrogen sulfide, and less rapid for hydrogen, oxygen, and methane. Nitrogen and atmospheric air are absorbed very slowly, because a similar concentration is present in the blood^(1b). Absorption of all gases is inhibited by a distended and atonic bowel, not because of a decreased blood supply but because of the tendency of gases to pass from the blood into the area of lowered intraluminal tension⁽¹⁾.

Atonicity, excretion of fluid, and enlargement of the lumen thus set up a vicious circle, with more and more gas collecting. It is seen that lack of intestinal activity invites distention and prevents absorption, the second most important means of eliminating gases. A rapid return of peristaltic activity and an adequate diet to insure this activity should alleviate the discomfort of the first few days. It has been the general belief that in patients with peritonitis or abdominal abscess, intestinal activity will prevent or break down walling off, and invite disaster. Mahoney states that paralytic ileus is much more dangerous than the possibility of a spreading infection⁽³⁾. In view of the results obtained from intraperitoneal implantation of the sulfonamides, this statement seems to be based on firm ground.

Intestinal paresis must be considered further. As was stated above, peristalsis is the most important means of ridding the tract of accumulated gases. Anesthesia, general or spinal, temporarily paralyzes peristalsis. Lack of food or other stimulation lengthens the time of this paralysis. We know that the term "gas pains" is a misnomer and that there is no large amount of gas present when they occur⁽⁵⁾. These pains, which occur on the second to fourth post-operative day, are more severe in the nervous individual, and are cramp-like in nature. Physiologically they are probably hypertonic contractions of a previously para-

lyzed intestinal musculature regaining its tone. There being no solid material to act as a bolus, the contractions are spastic and irregular, and cause pain by tension. Much more to be feared is the silent abdomen, tympanitic and obviously increasing in distention. If normal activity is regained smoothly and without undue force, so that nausea and vomiting do not occur, both "gas pains" and distention or ileus will be avoided.

Treatment

The belief has long been held that food would not be tolerated by the gastro-intestinal tract soon after anesthesia and operation. It has further been believed that decomposition of food during digestion would cause distention by the gas thus produced. For these reasons patients have routinely received fluids for two to four days and then a light diet. The result has been too often discomfort, followed by difficulty in beginning a soft diet.

Non-gas-forming food may be given in small amounts immediately following return to consciousness. Orange or fruit juices, milk, broths, and cellulose foods are to be avoided completely. Broths and other liquids admit a large amount of air during swallowing and their consistency encourages diffusion of blood gases into the intestine.

The following regimen has been effective:

1. Upon return to consciousness the patient receives sips of water or tea after nausea has ceased. If this causes a return of nausea, cracked ice is substituted. If the patient vomits once or twice, the fluid is stopped, but the patient is encouraged to try again later.

2. Six to twelve hours following operation two or three crackers with sips of water just sufficient to aid in swallowing are given. Chewing gum has been advocated by some. These substances cause secretion by the salivary glands, which sets up peristalsis. The bolus formed by the crackers is carried down, digestion begins, and intestinal activity starts anew, without too much material at one time to reverse the process.

3. The next morning a soft, solid diet is started. No milk, orange juice, broths, or carbonated beverages are allowed. The patient is urged to eat but not to force the food. A few minutes used to explain the importance of eating usually results in

1. Kantor, J. L. and Marks, J. A.: A Study of Intestinal Flatulence, *Ann. Int. Med.* 3:403-422 (Nov.) 1929.
5. Alvarez, W. C.: *An Introduction to Gastro-Enterology*, New York, Paul Hoeber, Inc., 1940.

whole-hearted cooperation. Dry toast, cooked cereal, potatoes, rice, soft boiled eggs and gelatin are palatable and are not offensive as gas formers. Halperin⁽⁶⁾ found that 25 per cent of his patients on a straight protein diet vomited immediately following the meal. Riggle⁽⁷⁾ allowed his patients a wider variety, including milk, with over 75 per cent experiencing some distention or gas pains. No effort was made in this series to select food-stuffs for nutritional value.

4. On the third postoperative day an unrestricted soft diet is instituted. An enema is given that afternoon, followed by a mild cathartic. Mahoney and Riggle both gave mineral oil from the first postoperative day. This procedure seems to have little advantage, and there is more danger of causing nausea.

Adjuvants

We felt that in the more serious cases added measures against distention or ileus should be instituted, especially where peritonitis or irritation is present. Consequently such patients have received 1 cc. (1-2000) prostigmin (Hoffman-LaRoche) every four hours for six to eight doses. Graded amounts were given to infants and children. The first dose was administered immediately after operation, on the grounds that intestinal tonus is much more easily retained than regained.

Although dietary orders were strictly given for our patients, on several occasions they were not so strictly carried out. In these patients orange juice and milk were given, and pains followed within fifteen to forty-five minutes. One cubic centimeter of prostigmin, followed thirty minutes later by a low rectal lavage or a small rectal tube, alleviated the symptoms.

Morphine has been given routinely when needed postoperatively, but there has rarely been need for this drug following the second postoperative day.

Results

The following table indicates the types of cases in which this regimen has been followed. The results tabulated have been evaluated entirely on the basis of distention obvious from palpation and percussion and on subjective symptoms volunteered by the patients.

Operation	No. Cases	Results		
		Poor	Fair	Excellent
Appendectomy	28	2	3	23
Simple Acute	19	1	1	17
Local Peritonitis	6	1	2	3
Generalized Peritonitis	3	0	0	3
Pelvic	22	2	1	19
Herniorrhaphy	12	0	0	12
Total	62	4	4	44

There were no cases of intra-abdominal abscess. In all cases of ruptured appendicitis, sulfanilamide powder was placed intraperitoneally, the peritoneum was sutured without drainage, and prostigmin was administered. Two patients with hemorrhage and two with purulent salpingitis showed little distention and subjective complaints were minimal. It may be said here that patients with hemorrhoidectomies, mastectomies, amputations, and other non-abdominal operations have shown equally good results.

The most striking feature of this series has been the psychologic effect on the patients. By the third postoperative day the condition of patients on this regimen compares favorably with that of patients on the seventh or eighth day of the old regimen.

Conclusions

1. Intestinal gases accumulate postoperatively from decomposition of intestinal contents, diffusion of blood gases, and swallowing of atmospheric air.

2. Elimination of these gases is dependent upon peristalsis and to a lesser degree upon absorption from the intestines into the blood stream.

3. Postoperative distention is avoided and an early return to normal intestinal activity accomplished by immediate feeding of a non-gas-forming diet after gentle surgery.

4. "Gas pains" are avoided or decreased by immediate postoperative feedings.

5. The results of this series indicate that immediate postoperative feeding is not only safe but beneficial following abdominal operations.

Prevention of Hemorrhage in Peptic Ulcer.—Severe hemorrhage . . . does not often develop in the patient who is on a proper ulcer regimen. I do not believe that I have observed a hemorrhage of significant severity in a case under adequate treatment, except when the patient has been subjected to some unusual emotional strain or after some other digression from his routine of management. Prevention, therefore, is largely a matter of keeping the patient on his ulcer program.—T. Grier Miller: *The Management of the Complications of Peptic Ulcer*, New England J. Med. 224:402 (March 6) 1941.

6. Halperin, P. H.: *Early Postoperative Feeding*, Wisconsin M. J. 39:94-96 (Feb.) 1940.

7. Riggle, P. P.: *Postoperative Care to Restore Normal Physiology*, Am. J. Surg. 50:724-727 (Dec.) 1940.

HOOKWORM: AN ETIOLOGIC FACTOR IN DUODENITIS

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GOLDSBORO

This short paper concerns a new condition associated with an old disease. I have been coming in contact with hookworm infested patients ever since 1910, but did not discover that the hookworm caused duodenitis until about two and a half years ago. This finding stimulated my interest, and I feel that you will, likewise, be interested to know about a condition associated with a disease as prevalent as hookworm disease.

Symptoms of duodenitis are very indefinite and do not form a recognizable clinical pattern. The diagnosis can be made by a careful history, together with fluoroscopic observations following a barium meal, and confirmed by stool examination.

For a period of years patients have been presenting themselves to me with a complaint of stomach trouble which was not characteristic of either gastric or duodenal ulcer. Some of these patients did very well when they were kept on an ulcer diet and given alkalis. However, many of them received no benefit from such therapy.

About three years ago I purchased a fluoroscope, which I have used in all of my gastrointestinal cases. In the year 1910, the late Dr. Charles Wardell Stiles brought to my attention a certain sign which is positive in 99 per cent of the patients with hookworm infestation. Dr. Stiles would have the patient stand erect, and with one hand placed on the left side of the back of the patient he would make pressure with the tips of the fingers of his right hand directly backward over the duodenum. If the patient evidenced discomfort, Dr. Stiles would unhesitatingly make the diagnosis of hookworm infestation, and prove it by finding the ova in the stool of the patient. I verified this sign on hundreds of occasions during my survey with the Rockefeller Commission from 1910 to 1913. At that time it did not occur to me that we were making pressure over an inflamed duodenum.

In the past two and a half years I have diagnosed and successfully treated 50 cases of hookworm duodenitis. I believe that the

best way to present my observations on this condition is by giving briefly several case histories.

Report of Cases

Case 1. My first diagnosis of hookworm duodenitis was made on December 5, 1939. At this time a fellow practitioner referred to me a white man, aged 35, married, who was believed to be a neurotic. This man gave a history of stomach trouble for a period of ten months. At times he would become so uncomfortable that he would vomit for relief. After eating he had a full sensation, accompanied by a numb feeling in both arms. Fluoroscopic study showed no pathologic lesion of the stomach. The duodenum filled and emptied, not by a normal peristaltic motion, but by a pushing type of filling. The entire duodenum filled, and after a time it gradually emptied. The duodenum was tender on pressure. A diagnosis of duodenitis, possibly due to hookworm infestation, was made. Stool examination was positive for hookworm ova. The patient was treated accordingly and recovery promptly followed.

Case 2. This patient was a white girl, aged 11 years. Her chief complaint was stomach trouble of several years' duration. The mother stated that the child turned pale when she had attacks of severe pain in her epigastrium. These attacks lasted from two to three hours and left her stomach sore. About three weeks before her first visit to my office she had an attack which was accompanied by nausea but no vomiting or fever. The patient's appetite was irregular, but her bowel movements were regular.

The child was 19 pounds underweight, pale and anemic. A diagnosis of hookworm duodenitis was made and confirmed by a positive stool examination. Two thymol treatments were given and were followed by two negative stools. The patient was making excellent progress in weight and development at the end of two months.

Case 3. A white boy, aged 10 years, complained of pain over the epigastric region. The pains were dull and cramping and came from twenty to thirty minutes after eating, lasting an hour or more. They were so severe that the child refused to take lunch to school and ate very sparingly of his breakfast and supper. The patient vomited one time, but this did not give relief. Gas was present and caused belching. The stomach

felt better when empty. The boy had been having these attacks for three weeks. There was a history of ground itch the previous summer. A diagnosis of pylorospasm complicating hookworm duodenitis was confirmed by finding hookworm ova in the stool. The patient was given two thymol treatments and was directed to eat no coarse foods, all vegetables being pureed. The patient had two negative stool examinations after treatment. Complete relief followed within a period of one month.

As you have noted, these cases present a varied group of symptoms, none of which suggest a typical ulcer history. Spasm of the pylorus was suggested and found in many of these cases. Many patients denied the history of dew poisoning, ground itch, or foot itch. Many of them had lived in towns and cities all of their lives and denied visiting in the country. Some had lived in the city for some time, but gave a history of ground itch, foot itch, or dew poisoning prior to their leaving the farm. Many of them had been hookworm sufferers over a period of years and had evidently received various diagnoses and treatments for the duodenitis. In many of them the diagnosis was difficult to make and would not have been suspected had it not been for the fluoroscopic study. Even then the diagnosis could not have been made had not sodium bicarbonate (one teaspoonful) been taken after meals for a series of six doses to remove the mucus from the duodenum.

I have not found this condition described in any of my textbooks. Therefore, after diagnosing and treating it successfully for a period of two and a half years, I have brought these experiences to you, hoping that they may assist you in diagnosing such cases.

Summary

Hookworm infestation of the duodenum with vague gastrointestinal symptoms is common; I have seen 50 cases in two and a half years. A physical sign to demonstrate tenderness indicative of inflammation in the duodenum is described. Duodenitis may be confirmed by fluoroscopy with a barium meal after the removal of mucus by the administration of sodium bicarbonate.

THE HARMFUL EFFECT OF TOBACCO ON THE COURSE OF BUERGER'S DISEASE

Report of a Case With Recurrence in a Man of Unusual Height and Weight

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CANTON

Thrombo-angiitis obliterans, or the so-called Buerger's disease, is a clinical and pathologic entity characterized by peripheral arterial thrombosis of obscure origin⁽¹⁾. The disease is a progressive inflammatory condition of the arteries and veins of the extremities, especially of the legs. The affected vessels are converted into fibrous cords, and gangrene of the part finally occurs⁽²⁾. When the vessels are occluded, there is apt to be an agglutinative process which binds together the artery and its collateral vein, and sometimes also the accompanying nerve, so that liberation of the individual vessels by dissection is difficult.

Symptoms

The symptoms of Buerger's disease in a pregangrenous stage are typical. The patient first notices a pain in the calf of the leg on walking, associated with numbness and coldness of the foot during cold weather. This pain is of the "intermittent claudication" type, and is relieved by sitting down and elevating the leg. Many patients can carry on a sedentary occupation without much discomfort, but can not walk for any distance without developing intermittent claudication⁽³⁾. The foot, when dependent, has a characteristic reddish-purple color, but it blanches to a corpse-like white when held perpendicular. There is an absence of anterior and posterior tibial pulse, the posterior tibial usually disappearing first. The veins are not prominent. The nails sometimes are dry and brittle. Finally, an exquisitely painful dry gangrene appears, with a slowly forming line of demarcation. When untreated, the disease affects first one leg, then the other, and then the hands. It may finally block off an important internal artery, such

Read before the Tenth District Medical Society, Marshall, May 22, 1940.

1. Stevens, A. A.: *Manual of the Practice of Medicine*, ed. 13, Philadelphia, W. B. Saunders Company, 1934, p. 770.
2. *Cyclopedia of Medicine*, Philadelphia, F. A. Davis Co., v. 6, p. 5.
3. Silbert, Samuel: *Amputations in Thrombo-Angiitis Obliterans*, S. Clin. North America 13:390-408 (April) 1938.

as the superior mesenteric or the coronary artery, and result in sudden death⁽³⁾.

Differential Diagnosis

In Raynaud's disease the local syncope develops suddenly and usually simultaneously in symmetrical parts; there is no history of antecedent pains; the fingers are much more frequently affected than the toes; the associated vasomotor and sensory phenomena are intermittent and are more distinctly dependent upon variations in temperature than those of Buerger's disease. In erythromelalgia, although pain and redness are especially marked when the affected member hangs down, the symptoms are aggravated by warmth and relieved by cold; the skin feels hot to the hand; the arteries throb; and there is no tendency to gangrene.

Treatment

Many forms of treatment have been tried in an effort to improve the circulation in the patient with Buerger's disease. Systemic treatment includes the usual supportive measures, eradication of local foci of infection, and elimination of tobacco. Specific treatment is directed toward establishing a compensatory collateral venous and capillary circulation to save the member threatened with gangrene. The following vasodilator methods have been tried: (1) Continuous local heat. (2) Drinking large amounts of water. (3) Buerger's postural vasodilation, raising the leg vertical to empty the veins, then swinging it down to pour the blood into them again. (4) Direct capillary dilatation by intravenous hypertonic saline solution, 5 per cent⁽³⁾. (5) Vasodilator drugs and the intravenous injection of typhoid vaccine to induce fever. Barker obtained marked improvement in 76 per cent of 150 cases with this method⁽⁴⁾.

Sulfanilamide has been useful in some cases, and there is an excellent opportunity for study to determine whether Buerger's disease is due to infection which can be minimized or eliminated by sulfonamides⁽⁵⁾. Sodium iodide thiosulfate has been recommended by Rabinowitz⁽⁶⁾, on the grounds that it allows oxygen to be absorbed and overcomes tissue anoxemia. It is given intra-

venously in 50 grain doses every day for three weeks, and then twice a week until pain disappears and the gangrene lesions heal.

Estrogens and thiamin chloride (vitamin B₁) have also been used in this condition.

It is well recognized that sympathectomy does not cure thrombo-angiitis obliterans. Probably it does not even alter the course of the disease in the blood vessels. It does, however, bring about maximal blood flow to the extremities, and for that reason is still the most logical procedure for increasing the blood supply in properly selected cases⁽⁷⁾.

In cases in which infection spreads rapidly in spite of attempts to control it and in which there is evidence of toxic absorption and sepsis, most workers agree that amputation is the logical recourse.

The results of treatment in patients with Buerger's disease would be greatly improved if the disease was recognized and treated in its early stages. Unfortunately, only a small proportion of patients are seen in this period. When a patient first develops unusual fatigue or pain in the calf after walking a few blocks, he is more inclined to limit his walking than to consult a physician about the reason for the symptom. Numbness of the foot is disregarded and the pains are attributed to rheumatism. Sometimes the patient diagnoses his painful toes as being due to an ingrowing toenail, and goes to a chiropodist, who removes the toenail, thus precipitating gangrene of the toe. Only then does the patient seek competent medical advice.

The Role of Tobacco

The great importance of complete abstinence from smoking is worth emphasizing. It has been shown repeatedly that patients who continue to smoke do not ordinarily improve as much as do patients who cease smoking. Dr. Allen, from Rochester, tells his patients, "You can have your legs or your tobacco, but not both."⁽⁷⁾ In a series of 1200 cases of this disease Dr. Samuel Silbert of Mount Sinai Hospital, New York, did not find a single typical and unquestioned case in a non-smoker. Patients who continue to smoke are difficult to treat, and frequently the condition progresses in spite of treatment. Recurrences of symptoms is the rule when patients who have been in excellent condition for many years again resume the

7. Allen, Edgar V.: Recent Advances in Medical Treatment of Peripheral Vascular Diseases 113:2375-2381 (Dec. 80) 1939.

1. Barker, N. W.: Results of Treatment of Thrombo-Angiitis Obliterans by Foreign Protein, J.A.M.A. 97:841-843 (Sept. 19) 1931.
2. Horton, Bayard T.: Outlook in Thrombo-Angiitis Obliterans, J.A.M.A. 111:2184-2189 (Dec. 10) 1935.
3. Rabinowitz, H. M.: Use of Sodium Iodide Thiosulfate in Treatment of Thrombo-Angiitis Obliterans, J. Chemotherapy 13:1-4 (April) 1936.

use of tobacco. It is understood that smoking will produce Buerger's disease only in those individuals who have a constitutional susceptibility to tobacco. Unfortunately it is not possible to determine by any test whether or not a person is susceptible.

The following case report illustrates the effect of tobacco upon the course of Buerger's disease.

Case Report

A white man aged 33, 6 feet, 8 inches tall and weighing 335 pounds, entered the Haywood County Hospital on October 17, 1938, with the chief complaint of severe pain in the calf of the left leg and gangrene of the toes. The patient gave a history of inability to walk, with all the typical symptoms of Buerger's disease. He had been a heavy smoker since he was 15 years old. For five years he smoked about twenty cigarettes daily, and after that he smoked as many as two packs daily. He first developed some pain and weakness in his left leg about three years before admission. During the winter his legs and feet became cold easily. The condition became acute in September, 1938, and by the time of admission he was unable to walk.

Physical examination showed a well developed adult male. The temperature was 99, the pulse 90, respirations 24. The heart and lungs were normal. The blood pressure was 130 systolic, 90 diastolic. Examination of the abdomen was negative. The left foot was cold and two toes were black. The patient was suffering severe pain in the left foot and calf. The dorsalis pedis, posterior tibial and popliteal arteries could not be palpated.

Examination of the blood yielded the following findings: Blood sugar was normal, and the Wassermann test negative. There were 3,700,000 red blood cells, with a hemoglobin of 70 per cent. There were 12,800 white blood cells, with 66 per cent segmenters, 6 per cent stabs, 3 per cent eosinophils, and 18 per cent small monocytes.

The patient was in the hospital for thirty-five days. Local heat was applied and hypertonic saline solution was given intravenously. Morphine sulfate was given for pain. Three toes were amputated bloodlessly. As there was no improvement in his condition, amputation of the thigh was done on November 16, 1938, under spinal anesthesia.

The pathological report made by Dr. Coy C. Carpenter, of Wake Forest College, was as follows:

"Sections show various stages of the lesions seen in Buerger's disease. One vessel shows a thrombus in the stage of organization. Blood pigment is being engulfed by the macrophages, and the fibroblasts are growing into a framework composed of platelets and fibrin. In the wall of this vessel a few mononuclear cells and neutrophils are seen. There is evidence that the acute inflammatory process has not completely died out. The adventitia is thickened by fibrous tissue. Other vessels show the lumen completely obliterated except for new-formed channels which possess an endothelial lining.

"Diagnosis: Buerger's disease."

The patient returned home after the amputation stump healed. For about six months he was a total abstainer from tobacco. Then he began smoking a few cigarettes daily, increasing the number until he was using about one and a half packs a day. Soon he began to notice some pain in the calf of his other leg. In spite of advice to the contrary, he continued smoking until ulcers appeared on his great and second toes. They were treated with an electric light under a cradle, and with other measures described above. He decided then that if he didn't give up smoking he would lose his other leg. Accordingly he stopped, and I believe that this was an important factor in the healing of his ulcer.

It has been three and a half years since his amputation, and he gets about on his crutches with perfect ease, considering his present weight (295 pounds). The prognosis depends upon the care he takes of his other extremity and upon whether he continues the use of tobacco.

Summary and Conclusions

1. A case of Buerger's disease is reported in a patient of unusual height and weight who had been a heavy smoker for eighteen years.
2. Amputation of one leg was necessary after conservative measures had failed to arrest the disease.
3. After a six months' interval symptoms in the opposite leg occurred when the patient again began smoking heavily, and disappeared when he ceased smoking.
4. It should be recognized that our knowledge of this disease is limited, and that any attempt to evaluate therapeutic measures is difficult. The apparent truth of today may be the error of tomorrow.

RECOVERY FROM STREPTOCOCCUS VIRIDANS BACTEREMIA AFTER SULFANILAMIDE

Report of a Case

WINGATE M. JOHNSON, M. D.

WINSTON-SALEM

While instances of recoveries from streptococcus viridans blood stream infections are slowly accumulating since the advent of the sulfonamides, the number is still small enough to warrant the report of an additional case.

E.R.D., a white male passenger agent 38 years old, was known to have had valvular heart disease for twenty-five years—the result of a severe attack of rheumatic fever. Cardiac reserve had been fairly well maintained until he had a severe pharyngitis (apparently influenzal). He was treated by a laryngologist with local applications and a cough mixture for a week. His cough and dyspnea grew steadily worse until he could not breathe lying down. When I first saw him about 8 p.m. on February 5, he was quite dyspneic. His abdomen was distended and presented the physical signs of considerable free fluid; the liver extended about 4 inches below the costal margin; both lower extremities were swollen and edematous; and numerous crepitant rales were heard in both lung bases. The pulse was rapid and totally irregular. The heart was greatly enlarged. A loud, rumbling diastolic murmur was heard best at the second right interspace, extending down the sternal border to the fourth interspace, and a faint presystolic and a blowing systolic murmur were heard at the apex. The temperature was normal.

Digitalis—four cat units—was given at once, followed by two cat units every four hours for three more doses, and a combination of an opiate and a hypnotic was prescribed to be given at bedtime. When seen next morning the patient was much more comfortable. The digitalis was continued in doses of one cat unit every four hours.

About 1 a.m. on February 7, the patient had a sudden severe pain in the right posterior axillary line just below the angle of the scapula, and began to cough up bright red blood. His temperature gradually rose to 102 F. When seen about 9 a.m. he was

cyanotic, his pulse was rapid, and his respirations were labored. There was impaired resonance and a great increase in the rales at the right lung base. The obvious diagnosis of pulmonary infarction was made, although there was no friction rub. He was given a hypodermic injection of morphine and atropine and was sent in an ambulance to the hospital.

On admission his temperature was 102 F., the pulse 130, and the respirations 28. The temperature soon rose to 103.4 F. and dullness and bronchial breathing developed over the base of the right lung. The leukocyte count on admission was 8700, with 70 per cent neutrophils and 30 per cent lymphocytes; the red cell count was 4,400,000, and the hemoglobin was 80 per cent (Sahli). The sputum showed many pus cells, staphylococci and diplococci. The urine had a specific gravity of 1.015, was acid in reaction, and showed a trace of albumin and 40 to 50 leukocytes per high-power field.

The second day after admission the patient was desperately ill. The leukocyte count had risen to 17,400, with 94 per cent polymorphonuclears. A blood culture was obtained, and he was then given an initial dose of 2 Gm. of sulfathiazole, followed by 1 Gm. every four hours. The digitalis was continued.

On February 9—the third hospital day—the blood culture showed “innumerable colonies” of streptococcus viridans. As the patient's fever continued and his condition was still critical, on February 10 the sulfathiazole was discontinued and sulfanilamide, 20 grains every four hours, was begun.

A blood culture taken the next day (February 11) was negative. Repeated blood cultures made at two-day intervals for the rest of his stay in the hospital continued to be negative. The sulfanilamide blood concentration ranged from 5 mg. to 8 mg. per 100 cc. The temperature gradually subsided to a normal range by February 14, but nine days later rose to 101 F., and for several days continued to range between 99 and 102.6. His lung was clearing up, his heart had responded quite satisfactorily to digitalis, his appetite and digestion were good, and his general condition seemed satisfactory. The urine, however, continued to be loaded with pus cells, and a culture of it made February 25 showed staphylococci and

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colon bacilli in abundance. Rectal examination found the prostate moderately enlarged and tender.

On February 26, the sulfanilamide was discontinued and the next day sulfathiazole, because it was thought to be most effective against urinary infection, was given again, beginning with 2 Gm. every four hours for two doses, then 1 Gm. every four hours. There was no decrease in the amount of pus found in the urine, but the temperature fell to normal on February 28—two days after the sulfanilamide was stopped—and remained normal until his discharge from the hospital on March 9.

In addition to the sulfonamide and digitalis therapy, whole vitamin B complex was given during most of the patient's stay in the hospital. Before it was begun, however, his appetite—except for the first few days when he was desperately ill—remained good. He ate almost ravenously while taking 120 grains of sulfanilamide daily, in addition to full doses of digitalis. His appetite and his courage were important factors in his recovery. Even when he was at his worst, he had a smile for every one who came into his room.

He continued to improve steadily after going home. On April 7 he was able to go to his office for part of the day, and ten days later he was working full time. He has continued to take maintenance doses of digitalis and his cardiac reserve has been good. Blood cultures taken at monthly intervals for more than a year since his discharge have all been negative.

Discussion

A man with rheumatic disease involving both the aortic and mitral valves, after an upper respiratory infection developed congestive heart failure with auricular fibrillation and pulmonary infarction. A shower of viridans streptococci invaded the blood stream, and apparently were overcome by full doses of sulfanilamide given by mouth. At one time this patient had to contend with congestive heart failure, pulmonary infarction, a viridans bacteremia, and a urinary infection. The stage was set for the development of subacute bacterial endocarditis, and possibly this complication had actually occurred.

There was a second rise of fever, after a

ten day afebrile interval, which promptly subsided after the sulfanilamide was discontinued. It is true that there was a urinary infection—probably due to a prostatitis of long standing—for which sulfathiazole was given. Since the pyuria continued, however, after the fever subsided, it is doubtful that the urinary infection played any role in the fever.

This case indicates that an individual may become sensitive to one of the sulfonamide group without being affected by another. The fever which developed after two weeks of sulfanilamide therapy declined promptly after the drug was discontinued, even though sulfathiazole was begun at once.

Levine¹⁾, speaking of bacterial endocarditis, says: "The recent discovery of sulfanilamide and its allied compounds may possibly change the outlook in some of these cases. It is not unlikely that these drugs, if given during the stage of bacteremia before the valves are involved, may actually prevent the development of endocarditis." It is possible that this case is at least one fulfillment of Levine's prophecy. Certainly the patient had an ideal set-up for a bacterial endocarditis: damaged aortic and mitral valves and a blood stream infection with *Streptococcus viridans*. The negative blood cultures during his stay in the hospital could have been explained by the inhibitory effect of the large doses of sulfanilamide; but now that he has been able to work steadily and monthly blood cultures have been negative for more than a year, it seems justifiable to report this case as one more triumph for chemotherapy.

1. Levine, Samuel A.: *Clinical Heart Disease*, ed. 2, Philadelphia, W. B. Saunders Company, 1940, p. 186.

The tuberculin test should be a part of the pre-school examination. Tuberculosis seldom develops in its clinically serious forms in children but they are easily infected with the germs of the disease, which may remain dormant until they reach the teen age or early adult life, and then cause trouble. Through the tuberculin test it is possible to determine whether or not a child has been infected. When the test is positive every effort should be made to find the source of infection and to protect the child from further exposure to the disease. It is important to point out here that precaution should be taken to make sure that maids and other household employees are free from tuberculosis by having them tuberculin tested and x-rayed if positive to the test. Chester A. Stewart, M.D., *Louisiana News in Brief*, Sept.-Oct., 1941.

ECONOMY IN VITAMIN MEDICATION

JOSEPH B. STEVENS, M. D.

GREENSBORO

The trend of recent events leads one to feel that both the public and the medical profession have become overly enthusiastic on the subject of vitamins. There is a rapidly growing tendency today to attribute most of the ills of the human race to a deficiency of this or that vitamin.

Vitamins are big business. The vitamin boom began in the early thirties, but really began to hit pay dirt in 1935. There are lush profits in this business. To quote Sebrell of the U. S. Public Health Service⁽¹⁾, "In 1938 the American public spent \$100,000,000 for vitamin preparations. In 1937 they spent about half this amount, only 50 per cent of which was sold to or prescribed by physicians. For purposes of comparison it is pointed out that the balance—\$25,000,000—represented five times the expenditures for vitamin products bought directly by the public in 1935."

We all know that an easily recognizable clinical picture results from an advanced deficiency of the following vitamins: A, B₁ (thiamin chloride), nicotinic acid, riboflavin, C (ascorbic acid), D and K. Many observers have shown that single vitamin deficiencies rarely if ever occur. All grades of deficiency exist, and for every severe advanced case there are thousands of mild cases. We are not concerned here with the treatment of specific, far advanced deficiency states. We are concerned with the economics involved in the treatment of mild and borderline cases.

The following is a short summary of recognized mild deficiency states. The daily requirements given are for a moderately active man weighing 70 Kg. and are from the Nutrition Board of the National Research Council.

The signs and symptoms of mild vitamin A deficiency are night blindness, scaly skin (?), and hyperkeratosis. Fifteen thousand to twenty thousand U. S. P. units a day for seven to ten days will correct mild deficiency. The daily requirements are 4,000-5,000 U. S. P. units of vitamin A. Vitamin A capsules

contain two to two and one-half times the required amount.

The signs and symptoms of mild vitamin B₁ deficiency are paresthesia of the extremities, muscle tenderness, impairment of vibratory sense, and decreased tendon reflexes. Five milligrams three times a day will correct mild deficiency, and 2 mg. is the daily requirement.

Mild nicotinic acid deficiency results in sore mouth and tongue, papillary atrophy, diarrhea and roughening, redness and scaliness of the dorsum of the hands. Fifty milligrams three times a day for seven to ten days will correct mild deficiency, and 15 mg. is the daily requirement.

Riboflavin deficiency is characterized by photophobia, cheilosis, lacrimation, and purple sore tongue. Three milligrams daily is the curative and maintenance dose in mild deficiencies.

Vitamin C deficiency is characterized by irritability, spongy, bleeding gums, bone and joint pain, and petechial hemorrhages. One hundred milligrams three times a day will cure mild deficiencies. Twenty-five milligrams of ascorbic acid or 50 cc. of orange juice is the daily requirement.

Muscle weakness and head sweats characterize vitamin D deficiency. Two thousand U. S. P. units per day are required for mild deficiency. One and one-fourth teaspoonfuls of codliver oil or 400 U. S. P. units is the daily requirement. Vitamin D capsules usually contain two to two and one-half times the daily requirement.

Vitamin K deficiency is characterized by bleeding and increased prothrombin time. The maintenance and curative dose is 1 to 3 mg. daily. Vitamin K is present in almost all green vegetables.

Prolonged vitamin medication in mild deficiencies and daily intake over the daily requirements result in excretion from the body and a waste of both vitamins and money. Most preparations of high potency contain two to four times the daily requirements.

Vitamin B₆ or pyridoxin, pantothenic acid, vitamin E (alpha tocopherol) and other vitamins have been identified, but there is still much doubt that their lack produces a characteristic deficiency state in man. So called vitamin B complex capsules range in price to the patient from five to seven cents per capsule and the liquid preparations from \$1.50 to \$2.50 per pint. Most of these liquids,

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

1. Sebrell, W. H.: Nutritional Diseases in the United States, J.A.M.A. 115:851-854 (Sept. 7) 1940.

but not all, contain a wine base and 6 to 10 mg. of thiamin chloride per ounce, giving a daily dose of 3 to 5 mg. of thiamin. In addition to this, most contain B₆ and pantothenic acid in small amounts, which increase the cost and probably benefit the manufacturer more than the patient. The price of the capsules is increased also by the addition of pantothenic acid and B₆ in small amounts. The 1 mg. of thiamin and 5 Gm. of nicotinic acid present in such capsules could much better be supplied, when necessary, in brewers' yeast at \$.50 a pound and nicotinic acid tablets in pure form for a little over a half cent each.

Alpha tocopherol or vitamin E has been very disappointing in the treatment of muscular atrophy and allied states, and no known deficiency in the human being has ever been satisfactorily demonstrated. However, vitamin capsules are available at \$7.50 per one hundred.

Practically, the treatment of mild vitamin deficiencies is simple and may be described in a few words: *A well balanced diet*⁽²⁾. The patient should be urged to eat a variety of meats, green and yellow vegetables, milk, eggs, and fruits. When specific and recognizable deficiencies are found, vitamin therapy is indicated for a short while, but should always supplement the dietary treatment, never replace it.

According to Sherman and Lanford⁽³⁾, vitamin A is found abundantly in greens, spinach, kale, turnips, collards, liver, butter, cheese, carrots, broccoli, eggs, and squash. Thiamin chloride is found in yeast, wheat germ, ham, pork, liver, kidney, eggs, nuts, green peas, lima beans, shad roe, and corn meal. Nicotinic acid is contained in liver, brewers' yeast, beef, salmon, peanuts, whole wheat bread, soy beans, spinach, lamb, tongue, shad roe, and green peppers. Riboflavin is present in brewers' yeast, liver, kidney, cheese, eggs, ham, spinach, beef, milk, broccoli, collards, and peas. Vitamin C is found in green peppers, broccoli, kale, turnip greens, collards, cauliflower, lemons, oranges, grapefruit, cabbage, tomatoes, and strawberries. Vitamin K is present in almost all green vegetables.

To quote an editorial in the *Journal of the American Medical Association* for October

25, 1941, entitled "Shotgun Vitamins Rampant", "The body of man has not evolved so that he can function efficiently on tablets and food concentrates. His physiology requires the materials essential to health and well being in the form of food. Synthetic tablets are not a perfect substitute. Foods common to the American dietary properly selected will contribute everything that foods can give to the maintenance of good health. From an economic point of view, foods are the cheapest source of vitamins and other essential elements. The ingredients of food purchased in the form of pills are wastefully expensive. In these times, when conservation of economic resources is essential, people should realize this important fact. . . . Vitamins are merely important food constituents that have been isolated, concentrated or synthesized. Restricted diets may lack some of these vitamins, and that lack expresses itself in a variety of symptoms. But relief of fatigue and the jitters or the creation of health and beauty will not come from vitamin capsules unless the symptoms have appeared or the beauty has been lost as the result of a specific deficiency. If the daily consumption of a good serving of ham, a green vegetable, a glass of milk, a slice of brown bread, an orange, and the other constituents of a suitable diet will not maintain the body in a satisfactory state of nutrition, a medical study is needed more than a shot with a shotgun pill of vitamins. A given amount of vitamins, like oil in the crank case of your car, is necessary to insure proper functioning; but the efficiency of the parts is not increased by adding unlimited amounts."

The Diagnosis of Pancreatic Disease.—The reasons for making an early diagnosis of pancreatic disease can be briefly stated. Early diagnosis of acute pancreatic edema and pancreatic necrosis is essential to avoid needless operation. Early diagnosis of cancer of the pancreas permits of radical operation which holds promise of prolongation of life and increased comfort and the possibility of cure. In diagnosing acute disease the determination of diastase in the blood or urine is essential. In diagnosing cancer of the pancreas the secretion test is a great aid, but to recognize the disease in its early stage the diagnostic significance of loss of weight with pain in any part of the abdomen in the absence of disease of stomach and intestine should be recognized. The diagnosis is most often missed because physicians forget that the patient has a pancreas.—Joseph H. Pratt: *Pancreatic Disease*, J.A.M.A. 120:182 (Sept. 19) 1942.

2. Ruffin, J. M.: The Diagnosis and Treatment of Mild Vitamin Deficiencies, J.A.M.A. 117:1493-1496 (Nov. 1) 1941.
3. Sherman, H. C., and Lanford, C. S.: *Essentials of Nutrition*, New York, The Macmillan Co., 1940, p. 371, table 27.

HYPNOSIS

LEO ALEXANDER, M. D.

DURHAM

Hypnosis is a state of reduced wakefulness which is brought about in the patient by his cooperation with the directions given to him by the therapist. Hypnosis is a useful therapeutic method in the following conditions:

Hysteria, including anxiety hysteria; anxiety states; anxiety neurosis; tension states; reactive depressions, especially if associated with certain hysterical elements; phobias; psychoneurotic hypochondriasis; and certain obsessive states, such as writer's cramp. Even organic neuropsychiatric conditions, if associated with reduction of impulse or with inhibition, depression and obsessive-compulsive phenomena, such as are found in Parkinsonism, may be temporarily relieved by hypnotic treatment.

The beneficial effect of hypnosis in all these conditions is based on the following four factors:

(1) *An increased awareness of psychosomatic relationships*, which impresses itself particularly strongly upon the patient in the initial stages of the hypnosis; its effects are akin to those of the Yoga method of Far Eastern faith healers. The production of this awareness—for instance of the increasing "weight" of an extremity after concentration on warmth and heaviness, produced by hyperemia and relaxation of tonus—is particularly beneficial in anxiety states and in hypochondriasis.

(2) *Increased readiness for the acceptance of suggestion*, which appears at a somewhat deeper stage of the hypnosis, and enables the patient to break through the emotional blocking of certain functions, under the impact of the weight of the suggestion. This aspect of hypnotic therapy is particularly important in hysteria and related conditions, and its success in eliminating the distressing symptoms opens the patient for subsequent psychotherapy directed at the more basic aspects of the disease.

(3) *Catharsis*. When the so-called somnambule stage of hypnosis is reached, the

patient is ready to talk, or at least to answer questions about the more basic psychological factors which are operating in his illness, such as fears, worries, guilt feelings, etc., and of which he was either not aware or only incompletely aware in the waking state, or which he could not recall in the waking state because of repression of unpleasant material. The latter does not apply only to recent, but also to early infantile traumatic material. The clarity of formulations which many not particularly eloquent or clear thinking patients are capable of in the somnambule stage of hypnosis is frequently extraordinarily striking, and can only be compared with the directness and clarity of emotional expression prevalent in certain dreams. The catharsis on the patient's part should be followed by equally direct and clear-cut psychotherapeutic directives given by the physician who is carrying out the hypnotic treatment. These psychotherapeutic directives include interpretation, persuasion, and strong suggestion, the latter particularly in reference to release from subjective guilt feelings. The acceptance of intensive psychotherapy in this stage of the hypnosis is so greatly enhanced that the results of one session frequently equal or surpass those obtained by weeks or months of painstaking psychotherapy in the waking stage. This cathartic-psychotherapeutic aspect of hypnotic psychotherapy is particularly important in anxiety and tension states, obsessive states, anxiety neurosis, and reactive depression.

(4) *Activation*: It is well known that a hypnotized subject can employ greater physical strength than he can in the waking state, probably because in the absence of distraction and with strong concentration augmented by acceptance of suggestion more motor units can be brought into play in the same muscle at the same time than is usual in ordinary motor voluntary innervation. The subjective experience of this extraordinary motor strength, especially if given in the lighter stages of the hypnosis, has a great activating effect upon the patient, and if made to carry over into the waking state by appropriate post-hypnotic suggestion, can render useful service in the treatment of many conditions associated with reduction of impulse or with inhibition, temporarily even in those caused by organic cerebrospinal disease.

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From the Department of Neuropsychiatry, Duke University Medical School and Hospital.

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OCTOBER, 1942

1943 MEETING OF THE AMERICAN MEDICAL ASSOCIATION CANCELLED

The *Journal of the American Medical Association* for September 27 announces that after long and serious discussion, the Board of Trustees has decided to cancel the annual session for 1943, which was to have been held in San Francisco. This is the first time since the Civil War that such a step has been taken, and the decision underlines the whole-hearted manner in which organized medicine in this country is supporting the Government in its defense program. It also recalls Carl Goerch's story of the questionnaire submitted to a study group at the University of North Carolina, in which the question was asked, "What individual, aside from your mother and father, has had the most profound influence upon your life?" Most of the answers gave the name of a favorite teacher, a preacher, or a doctor; but one youth scored a bull's eye when he answered "Adolf Hitler."

Another apropos story was told in a recent issue of the *Victor News*. A soldier, trying to find his tent on a dark, rainy night, fell deep into a mud hole. A string of oaths was climaxed with, "That - - - Hitler is to blame for this!"

NOMINATING DR. De KRUIF FOR A SETTEE

Recently a practicing physician remarked that he dared not fail to read the *Reader's Digest* as soon as it appeared, for fear his patients would think him ignorant of medical progress. Most of the medical articles carried by that interesting little magazine are written by Dr. Paul de Kruif. Dr. De Kruif is a Doctor of Philosophy, not of Medicine; but that does not hinder him from expressing medical opinions dogmatically and forcefully. In the June issue of the *Digest*, for instance, in an article entitled "This Summer—Watch Out for Ticks", he gives the mortality of Rocky Mountain spotted fever as 80 per cent. Dr. William H. Holmes, late Professor of Medicine at Northwestern University, says that the death rate varies from 5 per cent to 20 or 25 per cent, except in Montana, where it "is about 40 per cent"; but Dr. Holmes's statistics are not so attention-arresting as are De Kruif's.

In the September issue of the *Digest*, Dr. De Kruif blithely assures the public that it is now possible to cure syphilis in one day—an eight-hour working day, at that—by a combination of fever and arsenic. According to the *Journal of the American Medical Association* (Sept. 5), the only foundation for this forthright statement is an extract from an article on fever therapy by Simpson, Kendell and Rose, published in the *British Journal of Venereal Diseases* for January-April, 1941. The authors described the treatment of a few cases by fever and mapharsen, but concluded: "The results of this purely experimental undertaking will be made the subject of a later report."

It may be recalled that earlier in the year a sure cure for athlete's foot was given the public through this same medical medium. This "cure", consisting of the application of equal parts of camphor and phenol to the affected parts, resulted in nasty sloughs in some of Dr. De Kruif's patients. Some years ago in the *Ladies' Home Journal*, Dr. De Kruif turned tuberculosis expert and advised his readers who had tuberculosis that they could all be cured by having their lungs collapsed, and that if their doctors would not do this for them, it was because the doctors were ignorant or because they wanted their

patients to stay sick in order that they might receive larger fees. In this article he named seven places in the United States where collapse therapy might be had—four in his own native state. In North Carolina alone there were then at least fifteen institutions and twenty-five private physicians equipped to give this treatment.

Was not Oliver Wendell Holmes responsible for the mot that a certain Harvard professor taught so many subjects that he did not occupy a chair, but a whole settee? When one considers that Dr. De Kruif has—to his own satisfaction at least—qualified as an expert in so many medical fields, one is almost compelled to nominate him, not for a professorial chair, but for a settee in some medical school. Who bids for his services?

* * * *

THE DIAGNOSIS OF APPENDICITIS

One of the most valuable types of medical paper is the one devoted to a crisp, clear-cut discussion of a clinical subject. Such a paper appeared in the *Medical Times* for July, from Dr. Charles N. Carraway, of Birmingham, Alabama. Dr. Carraway gives the sequence of symptoms in appendicitis as follows: (1) pain; (2) nausea, with or without vomiting; (3) tenderness, manifested by rigidity; and (4) elevation of temperature and pulse. Almost invariably these symptoms appear in the order given. The least constant is nausea, and Dr. Carraway thinks that the condition of the stomach—whether empty or full—has much to do with this symptom.

Leukocytosis is usually but not always present, and is of minor importance in comparison to the sequence of symptoms just given. Dr. Carraway states: "We always have complete laboratory work done on all patients and when laboratory findings dovetail with the history and physical examination, we consider them of value. If . . . not, . . . we disregard them."

Some years ago the late Hobart A. Hare said that because of the increasing emphasis on laboratory procedures there was danger that a medical student would be graduated with the idea that a leukocyte count was of greater importance in the diagnosis of appendicitis than was palpation of the right lower quadrant of the abdomen. If Dr. Hare were living today, he would be happy to have such an astute observer as Dr. Carraway reiterate the importance of a careful history and physical examination.

"PRIVATE PRACTITIONER PREFERRED"

Under the above caption the *Hawaii Medical Journal* for July records an interesting experiment in socialized medicine recently carried out in Honolulu. The Military Governor of Hawaii ordered that all residents be vaccinated against smallpox, typhoid and paratyphoid. In the city of Honolulu the residents were given a choice between immunization by a private physician for a fee and free immunization by a government physician.

The government immunizations were done in first aid stations to which the people had become accustomed as gasoline rationing centers. The fee fixed by private physicians was \$1.00 per treatment or \$4.00 for the series. With this clear-cut choice between identical services gratis from the government or for \$4.00 from private practitioners, 112,897 or 56 per cent of the 201,945 persons immunized chose to pay for the vaccinations.

The conclusion drawn by the *Hawaii Medical Journal* is that "When John Q. Public has a job and is making an adequate wage, and when the cost of medical services is within his reach, he prefers to buy such care from a physician of his own choosing, and to pay the bill himself.

"He would prefer to do this even though the government offers him the same services and says, 'Keep your money. Let the taxpayer foot the bill.'"

* * * *

ADDING INSULT TO INJURY

From the beginning of the American Medical Association the initials A.M.A. have stood for that organization. Now, however, the federal government, not content with suing the American Medical Association for criminal conspiracy in restraint of trade, has usurped these initials for one of the newest and most minor collection of political henchmen. An Associated Press dispatch from Raleigh, dated September 9, bears the headline: "A. M. A. Will Buy Surplus Cabbage". The "A.M.A." in this case stands for the "Agricultural Marketing Administration". With so many possible combinations of the alphabet still left, why should our time-honored emblem be so desecrated? Some federal flunkey was ignorant, malicious, or equipped with a moron's sense of humor.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

BOWMAN GRAY SCHOOL OF MEDICINE OF
WAKE FOREST COLLEGE

W.N., a 60 year old white, married jeweler was admitted to the North Carolina Baptist Hospital on June 4, 1942, in a stuporous, moribund condition. The history was obtained from the patient's wife and a neighbor, and is inadequate as far as details are concerned. However, he had apparently been well until about six months before admission, when he had a massive gastric hemorrhage. He was admitted to a hospital in another city at that time, where an x-ray examination was made, and he was told that he had an "ulcer of the stomach". While in this hospital he received seven blood transfusions. The patient gave a vague history of hunger pains which were relieved by soda for the past ten to twenty years. There was no history to indicate previous gastro-intestinal bleeding.

After his discharge from the hospital he apparently got along quite well until about three months ago, when he began to notice edema of the extremities. The edema became progressively worse, involving the ankles, legs, and face. He finally developed abdominal ascites. He was again admitted to the same hospital, where he was treated with diuretics and a salt-free diet. On this regimen the edema and ascites apparently completely subsided. At that time he was told that he had "cirrhosis of the liver and kidney trouble". From then until the time of admission to this hospital he had been mentally confused at intervals. At times he would seem quite clear and at other times he was drowsy and completely irrational. The periods of drowsiness had increased in duration and frequency up until the time of admission to this hospital, and for two weeks prior to admission he had been drowsy and irrational most of the time. About three and a half months before his admission to this hospital his wife had first noticed a mass over the upper part of the sternum. No information is available as to the rate of growth or exact point of origin of this mass. The only complaint the patient admitted to during his illness and during his hospital

stay was generalized pain throughout his body, more pronounced in the small part of his back and in his legs. The pain was apparently rather severe and constant in character, and the patient said he felt it "in his bones". He had apparently had no fever or chills, but according to his wife he had been jaundiced on several occasions for two or three days at a time during the four months prior to his admission. There was no history of exertional dyspnea, orthopnea, pain in the chest, cough, fever, or chills.

The family and past histories could not be obtained in detail, but were apparently non-contributory.

On physical examination the temperature was found to be 37.8°C., the pulse 120, respirations 18, and blood pressure 148 systolic, 100 diastolic. The patient was an emaciated white man who was quite drowsy. He responded to questions very slowly, and was at times irrational. The skin was sallow but was not definitely icteric. The sclerae and mucous membranes were clear. The pupils were round, regular and equal, and reacted well to light and accommodation. The optic discs were well outlined and there was physiological cupping. Throughout both fundi there were numerous hemorrhages, some of which were flame-shaped and some of which were very dark, discrete, round and surrounded by pale zones. No exudates were seen. There was no unusual lymphadenopathy. A few shotty inguinal nodes were palpable. The percussion note over the chest was normal, and no rales were heard. There was a slight decrease in the breath sounds over the left chest. The heart size could not be accurately determined by percussion, but there was apparently some enlargement to the left. The heart sounds were distant, the rhythm was regular, and no murmurs were heard. The abdominal wall was flabby and was not distended. A sharp liver edge which was smooth and moderately tender was felt at the level of the umbilicus. Liver dullness extended up just above the right costal margin. The spleen was not palpable. No other abdominal masses were noted. The prostate was not enlarged and was thought to be normal. Examination of the extremities was negative except for tenderness to pressure over the shafts of both femurs. There was tenderness to percussion over the sacrum. Over the upper end of the sternum near the sterno-clavicular articulation and to the

right of the midline there was a firm, non-tender, rounded, mass about 4 by 6 cm. in size, which was not attached to the skin, but which seemed to be firmly attached to the underlying tissue. It was bony in consistency. Neurological examination was negative.

The urine examination was negative except for an occasional white cell. Two examinations of the urine for Bence-Jones protein were negative. The hemoglobin was 35 per cent, the red blood cells 2,225,000, the white blood cells 8100, with 57 per cent polymorphonuclears, 5 per cent large lymphocytes, 35 per cent small lymphocytes, 2 per cent monocytes, and 1 per cent eosinophils. No abnormal cells were noted. The nonprotein nitrogen was 32 mg. per 100 cc. The icteric index was 5.5. The blood Kahn test was negative. There was less than 5 per cent retention of bromsulfalein in thirty minutes. The spinal fluid was under a pressure of 125 mm. of water. It was clear, and there were no cells. The Pandy reaction was 1 plus. The spinal fluid Kahn test was negative.

An x-ray of the chest showed an old fracture of the ninth rib in the axillary line on the left, with a moderate amount of callus formation at the site of the fracture. There was a moderate amount of stringy fibrosis in both lungs, with a thickened interlobar pleura on both sides. There was nothing to suggest metastatic disease of the lung. The cardiac shadow showed marked enlargement, predominantly of the left ventricle. The aorta was slightly enlarged. An x-ray of the cervical spine showed hypertrophic arthritic changes. X-ray examination of the pelvis showed marked calcification of the iliac vessels. There were diffuse mottled areas of osteoporosis in the wings of the ileum, in the head of the femur, and in the pubic bone. These areas of rarefaction had the appearance of senile osteoporosis. However, metastatic malignancy of the bone could not be definitely ruled out.

The patient was given parenteral fluids, and opiates were required to keep him comfortable and free of pain. On the second hospital day a biopsy of the tumor mass was made. The patient's mental state gradually became more cloudy, so that after three days in the hospital it was impossible to rouse him. On the fourth hospital day he developed evidence of left sided facial weakness. No other neurological signs appeared. On the

fifth hospital day about twenty-four hours before death he developed signs of fluid at the base of the left lung. The temperature and pulse rate gradually increased to a peak of about 39.4 C. and 150 respectively. He died quietly six days after admission to the hospital.

Discussion

DR. TINSLEY HARRISON: One prefers to explain all of the important abnormal findings in a given patient on the basis of a single disease process. In this instance I know of no single disorder which can account for the rather numerous findings. It is necessary to assume at least two and possibly three independent diseases, each of which produces one or more important manifestations.

The patient's blood pressure was 148 systolic, 100 diastolic in spite of emaciation and cachexia. Since in moribund patients there tends to be a decline in blood pressure, one suspects that the pressure was higher during life, and this suspicion is strengthened by the presence of hemorrhages in the eye-grounds. Although severe anemia may lead to retinal hemorrhages, the anemia usually has to be even more severe than that in this patient in order to produce such changes. Leukemia typically leads to white centered spots with a surrounding zone of hemorrhage, and this description does not correspond to that of the hemorrhages in this case. Hence, I think we have to assume that the hemorrhages were the result of vascular disease, and since changes in the retinal blood vessels usually parallel closely those in the renal blood vessels, we are justified in making a diagnosis of hypertension with benign nephrosclerosis. This was apparently the cause of the cardiac hypertrophy. A large, smooth, tender liver can be accounted for by the assumption of a minimal degree of cardiac failure. The story of edema followed by ascites, which completely disappeared following diuretic drugs, can also be ascribed to cardiac failure, which was more marked in the past than at present. Of course the absence of dyspnea in the story is against the patient's having had congestive heart failure, but we have to remember that the history was obtained, in the main, from the patient's wife and is probably less reliable than it would have been if one had been able to get it in detail from the patient.

In a man of this age with cardiac enlarge-

ment, hypertension and retinal hemorrhages, cerebral arteriosclerosis is commonly present. The mental confusion, which cannot be ascribed to either renal or hepatic insufficiency—for the function tests of these organs were satisfactory—, can be accounted for by assuming changes in the smaller cerebral blood vessels. Such an assumption likewise explains the terminal development of facial paralysis. Our first diagnosis, therefore, is hypertensive cardiovascular disease with benign nephrosclerosis, cardiac hypertrophy and rather wide-spread arteriolar and arterial sclerosis. The patient probably had cardiac failure in the past, and the finding of a large, smooth liver and of fluid in the chest in the terminal stages of the illness suggests some degree of cardiac failure toward the end.

A second important manifestation which has to be accounted for is the story of gastro-intestinal hemorrhage six months before death. This certainly indicates an ulcerative lesion in the gastro-intestinal tract, and when taken with the x-ray report and the rather vague history of hunger pain, makes one suspicious of a peptic ulcer. Whether or not this peptic ulcer had anything to do with the later sequence of events is uncertain, but I think that we are justified in making a diagnosis of peptic ulcer as a second disease affecting this patient.

In order to account for the patient's death it is necessary to assume a third disease process. Aside from the manifestations which have been discussed, the patient had bone pain with tenderness, questionable intermittent jaundice, a mass over the sternum, a severe anemia of the hypochromic type, osteoporosis, a fractured rib without history of trauma, and evidence of thickened pleura. It seems unlikely that any metabolic disorder such as hyperparathyroidism or xanthomatosis could account for these manifestations in the progressive manner in which they occurred in this patient. I think, therefore, that we have to make a diagnosis of bone malignancy. Our major problem in diagnosis is to determine the type of bone malignancy.

One may conveniently divide the bone malignancies into three major groups, as follows: (1) the primary tumors of bones or cartilage, (2) tumors primary in the hematopoietic tissue, and (3) metastatic bone malignancy as the result of extension

from tumors primary at other sites of the body. As regards the primary bone sarcomas we should remember that these are usually diseases of young people and that most of them do not metastasize to bone. The Ewing tumor (endothelial myeloma) is an exception in this respect. It is a primary tumor of bone which frequently involves other bones by metastasis. In this respect the case under discussion would fit the clinical picture of Ewing's tumor, for there was a large mass in the sternum or ribs which might have been a primary tumor, and clinical evidence of metastasis (the x-ray evidence was by no means conclusive) to other bones. However, the sternum and ribs are rare sites for primary origin of Ewing's tumor, and most of the patients with endothelial myelomas are young, being in the second, third or fourth decade. Endothelial myeloma is so rare in people beyond the age of 40 that I think we can probably exclude it in this case.

In some respects the clinical picture suggests a long-standing osteochondroma which had undergone malignant change. Such a change may occur in a benign tumor of many years' duration, and if the story were that of a tumor of the sternal region which had been present for a long time and had recently begun to enlarge, one would be tempted to make a diagnosis of chondrosarcoma. However, the story suggests that the sternal tumor was of recent origin.

As regards bone malignancy in association with disease of the hematopoietic apparatus, several possibilities arise. The normal leukocyte count would make leukemia improbable, and the patient's age would seem to exclude chloroma. The lymphomatous diseases (including Hodgkin's disease and its variants) need to be thought of in every patient presenting a bizarre clinical picture with a fatal result. The absence of lymph node enlargement would make Hodgkin's disease in its several forms improbable. However, some of the other lymphomas, and more particularly the reticulum cell sarcoma, may occur and involve the internal nodes extensively without any involvement of the superficial nodes. The thing which seems to me to be against reticulum cell sarcoma and other forms of lymphosarcoma in this patient is the mass in the sternal region. This mass apparently arose from the bone, and although extensive invasions of the bone may occur in several varieties of lymphoma, it is exceptional for

one of the lymphomatous diseases to cause a mass as large as that felt over the sternum in this patient.

The patient's age and sex are quite compatible with multiple myeloma. Masses of a size equal to that noted in this patient, or even larger, sometimes occur. Involvement of the sternum and ribs are particularly common in myeloma, and pathological fractures of ribs, such as this patient had, are more characteristic of multiple myeloma than of any other disease. The recent history of dropsy would fit into the picture, because a nephrotic, or more rarely a nephritic, condition occurs in 80 to 90 per cent of the patients with multiple myeloma. There are certain features which are against the diagnosis of multiple myeloma—notably the absence of tenderness in the mass and the absence of Bence-Jones protein in the urine. However, proteinuria of this type is not present in all cases, and the patient's age, with the multiple bone involvement and the large mass over the sternum, plus a pathological fracture of a rib, makes this one of the most probable diagnoses.

In any patient 60 years of age with severe pain of the bones and with a fatal outcome of the disease, one thinks first of all of primary carcinoma with metastasis to the bones. The common sites are the breast, the prostate, the thyroid and the kidneys (most of the tumors spoken of as hypernephromas are actually renal carcinomas). This patient presents no evidence of carcinoma from any of these sites. It is less common for primary carcinoma of the female genitalia and of the stomach to metastasize to bones. However, it occurs in a small percentage of patients, and I think one of the diagnoses that has to be considered most seriously in the patient is carcinoma of the stomach with bone metastases.

The story of hunger pains for years with recent bleeding suggested peptic ulcer, and this patient may have had one of those ulcers which had undergone malignant degeneration and subsequently spread over the body with extensive osseous involvement. The x-ray changes in the patient are not characteristic of any type of bone malignancy. However, I think that the clinical picture is rather conclusive in this regard.

In summary, it seems to me that we are faced with a choice between a diagnosis of multiple myeloma and one of carcinoma of

the stomach. Two features lead toward the former rather than the latter diagnosis. One is the large mass apparently arising from the sternum. Such a mass fits much better with multiple myeloma than with metastatic carcinoma, for in the latter condition the metastatic bone lesions are usually fairly small. The second feature is the pathological fracture of the rib, which is so characteristic of multiple myeloma.

I believe that this patient had three different and unrelated diseases: (1) Hypertensive cardiovascular disease with cardiac hypertrophy, benign nephrosclerosis, vascular retinitis and sclerosis of the cerebral vessels; (2) peptic ulcer; and (3) multiple myelomatosis.

Pathological Discussion

DR. ROBERT P. MOREHEAD: As Dr. Harrison pointed out, this patient suffered from several diseases. The first relates to the circulation, and the autopsy findings were those of arteriosclerosis, an enlarged heart (concentric left ventricular hypertrophy), splenomegaly, hepatomegaly, and transudation into the abdominal cavity.

A typical gastric ulcer in the region of the pylorus readily explained the gastro-intestinal hemorrhages.

The third disease and the one responsible for the patient's death presented to the clinicians a much more difficult diagnostic problem than the two rather obvious conditions noted above. From the available data one should consider strongly the possibility of a chondroma showing malignant characteristics. In considering this group of tumors, one must differentiate between the multiple small phalangeal tumors which commonly occur in children and are almost universally benign and the group of large chondromas usually occurring singly in the sternum and long bones of adults. The latter group are prone to behave as malignant tumors, although cytologically they are benign. The strongest evidence against this tumor's being a chondroma or multiple myeloma is its roentgenologic appearance. In a cartilaginous tumor one sees expansion of the cortex without marked bone destruction and without an infiltrating shadow. In multiple myeloma punched out areas of bone destruction are present.

Examination of the sternal tumor revealed its location to be subperiosteal for the most

part, with very little bone destruction but with invasion of the bone marrow space by tumor tissue. There was marked extension of the tumor to the lymphatics of the parietal pleura, and the mediastinal lymph nodes were replaced by tumor tissue. In one area the thoracic vertebrae were involved, presenting a tumor mass very similar to that seen in the sternum. These tumor masses resembled both grossly and roentgenologically Ewing's tumor of bone.

Microscopically the tumor tissue everywhere presented the appearance of typical reticulum cell sarcoma, and this case should be classified as a reticulum cell variant of Ewing's tumor. This reasoning becomes rational when one recalls that the cells which constitute Ewing's tumor are in all probability lymphocytes and lymphoblasts which are in turn derived from reticulum cells.

Pathological Diagnosis

1. Concentric cardiac hypertrophy
2. Arteriolosclerosis with benign arteriolo-nephrosclerosis
3. Atherosclerosis
4. Gastric ulcer
5. Reticulum cell variant of Ewing's tumor (reticulum cell sarcoma)

Winthrop Chemical Company, Inc.

Dr. Harold L. Hansen has been appointed administrative assistant to the president of Winthrop Chemical Company, Inc., according to an announcement made recently by Dr. Theodore G. Klumpp, president. He takes up his new duties immediately.

Before joining Winthrop, Dr. Hansen was secretary of the Council on Dental Therapeutics of the American Dental Association, director of the A.D.A. Bureau of Chemistry, and consultant to the Federal Food and Drug Administration, the Federal Trade Commission and the Council on Pharmacy and Chemistry.

The Importance of Specification

Some physicians think it is commercial to specify a maker's name.

On the other hand, a physician of international reputation and unimpeachable standing has expressed himself as follows:

"I invariably specify Mead's whenever I can, because I feel that when I don't specify a definite brand, the effect may be the same as though I were to specify that any brand would do.

"By not specifying, I let down the bars to a host of houses, many entirely unknown to me and others deserving no support at my hands.

"When I specify Mead's I may be showing favoritism, but at least I know that I am protecting my results. If, at the same time, my self-interested act encourages a worthy manufacturer to serve me better, I can see no harm in that."

Mead Johnson & Company, Evansville, Ind., U.S.A., have to depend upon the physician to specify MEAD'S because "they do not advertise or "merchandise" their products to the public.

MEDICOLEGAL ABSTRACT

J. F. Owen, M. D., LL.B.

Raleigh

Workman's Compensation: Although tuberculosis is not an occupational disease, it is compensable when contracted accidentally, and in the course of employment.

This is a case in which an employee of the North Carolina Unemployment Compensation Commission brought a claim before the Industrial Commission for disability benefits. It was alleged that his disability resulted from his contracting tuberculosis from a fellow employee.

The first hearing was before a single Commissioner, and the case was later heard before the full Board. The evidence tended to show that the claimant worked in an overcrowded office, which was poorly ventilated, and it was brought out that he worked at a narrow table opposite a fellow employee who suffered from active pulmonary tuberculosis. The affected employee would at times involuntarily and unexpectedly cough directly in the claimant's face, and it was stated that as a result thereof, the claimant, who had theretofore been healthy, contracted pulmonary tuberculosis.

Two physicians testified, upon the basis of hypothetical questions, that in their opinion the claimant contracted the disease as indicated in the evidence.

The Industrial Commission awarded the usual benefits which the law allowed, whereupon the Unemployment Compensation Commission, the defendant in the case, appealed to the Superior Court. The Superior Court sustained the findings of the Industrial Commission, and the case was then appealed to the Supreme Court.

The Supreme Court, although not in complete agreement, inasmuch as two of the justices dissented, felt that while tuberculosis was not a compensable occupational disease—that is to say, one which is inherent in, or incident to, the nature of employment—the disease was contracted accidentally, and arising out of, and in the course of the claimant's employment. The fact that the disease was accidentally contracted brought it within the meaning of the Compensation Act, and as a consequence the claimant was awarded the usual benefits from a disability contracted in this manner. It was, therefore, held by the Supreme Court as follows:

"Such coughing was untoward, unfortunate, and unusual in its proximity to, and its effect upon, claimant, and constituted an accident, and the evidence is sufficient to support the findings of the Industrial Commission that claimant's disease resulted naturally and unavoidably from an 'accident'."

The Supreme Court affirmed the action of the Superior Court, which had awarded the claimant the usual benefits allowed by the Compensation Law.

(North Carolina Supreme Court, Vol. 217, Page 769. Decision rendered Spring Term, 1940.)

Young people attending tuberculosis patients must be very closely watched. Tuberculosis-negative persons are especially in danger. Even the tuberculin-positive persons, if young, may have become positive only very recently and therefore are still not out of danger. All newly discovered x-ray lesions in young adults must be treated as potential phthisis—by a period of observation under rest. Edgar Mayer, M.D. and Israel Rappaport, M.D., Jour. of Amer. Med. Assn., Apr. 4, 1942.

MILITARY MEDICINE

THE EFFECTS OF THE WAR ON THE MEDICAL SERVICE IN THIRTY-EIGHT NORTH CAROLINA COUNTIES WITH LIMITED PERSONNEL

MARSHALL I. PICKENS
Hospital Section
THE DUKE ENDOWMENT

The thirty-eight counties in the attached tabulation had in 1940 231 active physicians for a population of 558,658, or one active physician for every 2,418 persons. On July 1, 1942, there were 179 physicians in active practice in these counties, or one physician for every 3,121 persons.

In addition to the 179 physicians in active practice, 30 physicians from the thirty-eight counties were in military service and 3 were awaiting call as of July 1, 1942, making a total of 212 active men who under normal conditions would be in practice in these counties. Of the 212 physicians available, 33 or 15.6 per cent were in military service or awaiting call.

During the two-year period 1940-1942, the number of physicians in active practice in the thirty-eight counties decreased from 231 to 179, a loss of 52 physicians, or 22.5 per cent. Of the 52 physicians lost, 33 went into military service and 19 were removed by death, retirement, or by moving to other locations.

Counties	1940				1942		Age Groups of Active Physicians Left in Practice			
	In Active Practice	Population Per Physician	In Active Practice	Population Per Physician	In Military Service		55-65	66-69	70 & Over	
					Number	Percent of Active Men				
TOTAL (38 counties)	231	2,418	179	3,121	33	15.6	57	10	16	
Alexander	5	2,691	5	2,691	0	0	3	0	1	
Alleghany	6	1,390	3	2,780	0	0	1	0	0	
Ashe	9	2,518	9	2,518	0	0	2	0	3	
Avery	7	1,937	7	1,937	2	22.2	3	0	0	
Bladen	7	3,879	6	4,526	1 ⁽¹⁾	14.3	1	0	0	
Brunswick	6	2,854	4 ⁽²⁾	4,281	1	20.0	0	0	0	
Camden	3	1,813	3	1,813	0	0	2	0	0	
Caswell	4	5,008	4	5,008	0	0	2	0	1	
Chatham	10	2,473	6	4,121	2	25.0	0	0	0	
Chowan	6	1,929	4	2,893	1	20.0	3	0	0	
Clay	2	3,203	2	3,203	0	0	0	1	0	
Currituck	2	3,355	3	2,236	0	0	1	0	1	
Dare	5	1,208	3	2,014	1	25.0	2	0	1	
Davie	6	2,485	4 ⁽³⁾	3,727	2	33.3	2	0	1	
Gates	3	3,353	3	3,353	0	0	1	0	0	
Graham	3	2,139	1	6,418	1	50.0	0	0	0	
Greene	6	3,091	5	3,710	0	0	1	0	0	
Hertford	8	2,419	5	3,870	3	37.5	1	0	0	
Hyde	6	1,310	2	3,930	1	33.3	2	0	0	
Jackson	7	2,767	7	2,767	1	12.5	2	2	0	
Jones	4	2,732	4	2,732	0	0	1	1	0	
Macon	7	2,269	5	3,176	1	16.7	1	0	2	
Madison	6	3,754	6	3,754	0	0	2	0	0	
Mitchell	8	1,998	6	2,663	0	0	1	0	1	
Montgomery	6	2,713	6	2,713	0	0	3	0	0	
Onslow	8	2,242	7	2,563	1	12.5	2	0	0	
Pamlico	5	1,941	3	3,235	1 ⁽⁴⁾	25.0	1	1	0	
Pender	5	3,542	5	3,542	0	0	2	0	1 ⁽⁵⁾	
Perquimans	5	1,955	5	1,955	0	0	2	0	0	
Person	10	2,503	10	2,503	1	9.1	3	0	1	
Polk	8	1,484	4	2,968	3 ⁽⁶⁾	42.9	3	0	0	
Stokes	10	2,266	5	4,531	1	16.7	1	0	1	
Swain	10	1,218	6	2,029	0	0	1	1	0	
Transylvania	6	2,040	5	2,448	4 ⁽⁷⁾	44.4	1	2	1	
Tyrrell	1	5,556	1	5,556	0	0	0	0	0	
Warren	9	2,572	7	3,306	2	22.2	3	0	0	
Washington	7	1,760	5	2,465	2	28.6	0	1	0	
Yancey	5	3,440	3	5,734	1	25.0	1	1	1	

* Excluding physicians in Public Health work. 1—Awaiting call. 2—Dr. L. G. Brown at Fort Caswell does some local practice. 3—2 with limited practice, Drs. Greene and Byerly. 4—In Army at present but may return home soon. 5—Part time practice. 6—Dr. A. J. Jervey, Jr. killed in action, June, 1942. 7—2 awaiting call.

Of the 179 physicians left in active practice, 83, or 45 per cent, are 55 years of age and over. Of the 83 men over 55 years of age, 57 are between 55 and 65, 10 between 66 and 69, and 16, 70 years of age and over.

The 179 men left in active practice in these counties will have an average of 439 more persons dependent upon them for medical care than would have been the case had no physicians been removed for military service—3,121 persons per physician as compared with 2,682.

To provide adequate medical care, the generally accepted minimum standard is one physician for every 1,500 persons. These thirty-eight counties now average one physician for every 3,121 persons—more than double the maximum load a physician should carry. There are four counties of the thirty-eight where the average number of persons per physician is 5,000 or more.

A further consideration is the fact that twenty-seven of the thirty-eight counties listed have no hospital facilities, which places a further limitation on the physicians in these communities in providing adequate medical service.

Another factor is the fact that the average income of physicians in rural areas is low. As a result, the compensation offered to medical officers by the Government has a tendency to draw men from these areas, especially the younger men. No one will blame the young physician for leaving; he has an opportunity to serve his country in time of war, the compensation is better, and facilities for further training and experience are made available to him.

Major William Francis Martin, Chief Surgeon to Langley Field Station Hospital, Virginia, has notified the *Journal* that his name was omitted from the list of doctors from North Carolina who have received commissions since May 1, 1942. Dr. Martin, formerly of Charlotte, was commissioned as a Major in the air corps on July 18, 1942.

Physicians serving as full-time qualified health officers and those who head administrative units within health departments have been declared essential to the protection of the civilian population and, therefore, not available for military duty, by the Procurement and Assignment Service of the War Manpower Commission.

In setting up the criteria governing the status of qualified health officers, the Commission approved the recommendations made by the Advisory Committee on Public Health, of which Dr. Carl V. Reynolds, State Health Officer for North Carolina, is the chairman.

POLICIES GOVERNING THE INITIAL APPOINTMENT OF PHYSICIANS AS MEDICAL OFFICERS

The Surgeon General of the Army published detailed information concerning policies governing the initial appointment of physicians as medical officers on April 23, 1942. Necessary changes are given wide publicity, at his request, in order that the individual applicants, and all concerned in the procurement of medical officers, may know the status of such appointments.

The current military program provides for a definite number of position vacancies in the different grades. The number of such positions must necessarily determine the promotion of officers already on duty and, in addition, the appointment of new officers from civilian life. Such appointments are limited to qualified physicians required to fill the position vacancies for which no equally well qualified medical officers are available. Such positions calling for an increase in grade should be filled by promotion of those already in the service, insofar as possible, and not by new appointments.

If this policy is not followed, it would definitely penalize a large number of well qualified Lieutenants and Captains already on duty by blocking their promotions which have been earned by hard work. In view of these facts, it has been deemed necessary to raise the standards of training and experience for appointment in grades above that of First Lieutenant.

With this in view, The Surgeon General has announced the following policy which will govern action to be taken on all applications after September 15, 1942:

All appointments will be recommended in the grade of First Lieutenant with the following exceptions:

Captain. 1. Eligible applicants between the ages of 37 and 45 will be considered for appointment in the grade of Captain by reason of their age and general unclassified medical training and experience.

2. Below the age of 37 and ABOVE the age of 32, CONSIDERATION for appointment in the grade of Captain will be given to applicants who meet all of the following minimum requirements:

- a. Graduation from an approved medical school.
- b. Internship of not less than one year, preferably of the rotating type.
- c. Special training consisting of 3 years' residency in a recognized specialty.
- d. An additional period of not less than 2 years of study and/or practice limited to the specialty.

3. Eligible applicants who previously held commissions in the grade of Captain in the Medical Corps (Regular Army, National Guard of the United States, or Officers Reserve Corps) MAY BE CONSIDERED for appointment in that grade provided they have not passed the age of 45 years.

Major. 1. Eligible applicants between the ages of 37 and 55 MAY BE CONSIDERED for appointment under the following conditions:

- a. Graduation from an approved school.
- b. Internship of not less than one year, preferably of the rotating type.
- c. Special training consisting of 3 years' residency in a recognized specialty.
- d. An additional period of not less than 7 years of study and/or practice limited to the specialty.
- e. The existence of appropriate position vacancies.
- f. Additional training of a special nature of value to the military service, in lieu of the above.

2. Applicants previously commissioned as Majors in the Medical Corps (Regular Army, National Guard of the United States, or Officers Reserve Corps) whose training and experience qualify them for appropriate assignments may be **CONSIDERED** for appointment in the grade of Major provided they have not passed the age of 55.

Lieutenant Colonel and Colonel. In view of the small number of assignment vacancies for individuals of such grade, and the large number of Reserve Officers of these grades who are being called to duty, such appointments will be limited. Wherever possible, promotion of qualified officers on duty will be utilized to fill the position vacancies.

Much misunderstanding has arisen concerning recognition by Specialty Boards and membership in specialty groups. It will be noted that mention is not made of these in the preceding paragraphs. This is due to the variation in requirements of the different Boards and organizations. Membership and recognition are definite factors in determining the professional background of the individual, but are **NOT** the deciding factors, as so many physicians have been led to believe.

The action of the Grading Board, established by The Surgeon General in his office, is final in tendering initial appointments. Proper consideration must be given such factors as age, position vacancies, the functions of command, and original assignments. All questionable initial grades are decided by this Board. Due to the lack of time, no reconsideration can be given.

There are in the age group 24-45 more than a sufficient number of eligible, qualified physicians to meet the Medical Department requirements. It is upon this age group that the Congress has imposed a definite obligation of military service through the medium of the Selective Service Act. The physicians in this group are ones needed **NOW** for active duty. The requirements are immediate and imperative. Applicants beyond 45 years may be considered for appointment only if they possess special qualifications for assignment to positions appropriate to the grade of **MAJOR** or above.

OFFICE OF CIVILIAN DEFENSE

DR. BAEHR VISITS ENGLAND

Dr. George Baehr, Chief Medical Officer, Office of Civilian Defense, has gone to England to study Britain's Emergency Medical Service and confer with medical leaders. Dr. Baehr will remain abroad for several weeks.

* * *

SUPPLEMENTAL STAFFS FOR EMERGENCY BASE HOSPITALS

Selected hospitals and medical schools in the coastal States have been invited by the Surgeon General of the U. S. Public Health Service to organize affiliated staff units which will be ready to serve when needed to supplement the medical staffs of Emergency Base Hospitals, now being designated by the Medical Division of the Office of Civilian Defense. These units resemble the affiliated hospital units of the Army except that they are smaller in size. They are being organized in order to assure suitable status and remuneration for physicians who may be called upon in the event of an enemy attack in their locality to care for casualties and other patients who have been evacuated to the interior of their region.

NEW APPOINTMENT

Dr. Ward L. Mould of the Washington staff of the Medical Division, Office of Civilian Defense, has been appointed medical adviser to industrial plants to assist plant authorities in planning for adequate medical services in the event of a major emergency, in cooperation with the Emergency Medical Service organized in communities.

* * *

DENTISTS IN TRAINING TO AID PHYSICIANS

Sixteen dentists in Flint, Michigan, are taking special training in Flint hospitals at the invitation of the Genesee County Medical Society to enable them to assist physicians by performing certain medical procedures, and thus to relieve the growing shortage of physicians created by the demands of military service.

The training will qualify the dentists in the following procedures: Obtaining blood for examinations, intravenous feeding, intramuscular injections, intravenous injections and obtaining blood from donors for blood banks.

Several of the number are already qualified in some of these fields and are assisting in clinics and with Selective Service examining boards.

Colorado dentists are engaged in a similar program under the auspices of the Colorado State Dental Association and the Committee on Emergency Medical Service of the State Defense Council.

LIEUTENANT COLONEL SAM F. SEELEY TRANSFERRED TO MILITARY DUTY

The Directing Board of the Procurement and Assignment Service for Physicians, Dentists, and Veterinarians, has formally expressed its appreciation of the services rendered by Colonel Sam F. Seeley, who has been transferred to military duty.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Miss Mary Ruth Hunt, New Hanover County, North Carolina, is the winner of third prize in an essay contest sponsored by the United States Public Health Service in connection with its malaria control work in the South. Miss Hunt is one of twenty-six Southern school teachers who recently attended a two-weeks' course of lectures on malaria control sponsored by the Service and held at the University of Tennessee. At the close of the lecture series, students submitted essays describing their reactions to the course. The essays were judged by Public Health Service medical officers and sanitary engineers connected with malaria control work.

Winners of first and second prizes are: Miss Lucy Jane Cracraft, McCracken County, Kentucky, first prize; and William T. McGraw, Union County, Kentucky, second prize.

Prevention of malaria in the armed forces and among vital defense workers is so important that the New Hanover County Health Department, in cooperation with the Public Health Service, has been conducting an extensive program of malaria control in the vicinity of Wilmington this summer. As a part of this program, Miss Hunt has been carrying on an educational program among the adults of the county during July and August. She has returned to her duties.

"Major-General Lewis B. Hershey's announcement that men who have been rejected because of positive syphilis tests will be absorbed by the Army did not come any too soon," Dr. Carl V. Reynolds, State Health Officer, declared.

"Reports compiled by the United States Public Health Service show that out of the first 1,000,000 men examined for selective service 47,552 were rejected because they had syphilis. Major-General Hershey's announcement that these will be reconsidered and some of them taken into the Army was accompanied by the statement that within three months the 4,500,000-man goal advocated in June by Army Staff General George C. Marshall will have been realized.

"Basing estimates on rejections among the first 1,000,000 men, this means that there will be a total of 213,984 rejected syphilitics taking refuge behind our 18 and 19-year-old boys and married men with dependent children and those whose wives are incapable of earning a living. . . .

"We are told that even married men with dependent children will have to be drafted by the last quarter of 1943. Would it not be the part of wisdom to take first the syphilitic who can be cured?"

"Curing syphilis is not nearly as expensive as having to support dependent families. For the Army to treat and rehabilitate these men, many of whom, perhaps, would rather go on suffering with syphilis than to fight, would release just that much money, time, effort and equipment for treating those in civilian life who are not eligible for military service. One new method of treatment has been developed which, it is claimed, can cure syphilis in its first stages within eight weeks.

"Syphilis should no longer be allowed to remain an asset to those who have it by giving them immunity at a time when the nation is so sorely in need of manpower."

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The Southern Conference on Tuberculosis met in Memphis, Tennessee, October 5-7. Tuberculosis control during war times was the key-note for both medical and non-medical sessions of the conference.

* * * *

The Eastern North Carolina Sanatorium at Wilson was dedicated on September 23, and was opened to receive patients on October 1. Governor J. Melville Broughton spoke at the dedication exercises.

* * * *

Much interest is being shown in Durham County in remodeling one of the county buildings for use as a tuberculosis sanatorium to accommodate 80 patients. The building under consideration is a \$75,000 fireproof building located in the suburbs of Durham.

* * * *

North Carolina learns with regret of the resignation of Dr. H. E. Kleinschmidt from the staff of the National Tuberculosis Association. He was Director of Health Education and under his administration the department has grown and its influence has increased steadily.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Josiah Trent of Duke Hospital spoke to the students and faculty of the Bowman Gray School of Medicine on September 23. His subject was "Vesalius: His Life and Times".

MEETING OF HOSPITAL MERGER COMMITTEE AND REPRESENTATIVES OF HOSPITAL CARE, HOSPITAL SAVING, AND MEDICAL SERVICE ASSOCIATIONS

Hotel Barringer, Charlotte, September 16

The committee on hospital merger, appointed by the North Carolina Medical Society and consisting of Dr. Hamilton W. McKay, Chairman, Dr. Paul McCain and Dr. Julian Moore, met with the following representatives: Mr. E. M. Herndon, Hospital Care and Medical Service; Mr. E. B. Crawford and Mr. Robert Lassiter, Hospital Saving; Mr. J. M. Woolery, Actuary, North Carolina State Insurance Department; and Mr. Carl Flath, formerly of Michigan Hospital Service, now Administrator of the Charlotte Memorial Hospital, to try to bring about a merger between the three hospital associations sponsored by the medical profession—namely, Hospital Saving, Hospital Care, and Medical Service.

Dr. I. H. Manning, Medical Director of the Hospital Saving Association, who was not able to attend the meeting, sent the following letter to Dr. McKay:

Dear Dr. McKay:

Thanks again for your invitation to the luncheon, and regret that I could not be present. However, I think Hospital Saving Association is sufficiently represented with its president, Mr. Lassiter and its Director, Mr. Crawford. I hope very much something was accomplished for I feel sure a merger, consolidation or whatever it may be called, is a step in the right direction.

With best wishes, I am,

Sincerely,

Hospital Saving Association of N. C., Inc.
I. H. Manning, M.D., Medical Director

The object of the meeting was stated by the Chairman, Dr. Hamilton W. McKay, and the commission for the conduct of the committee, with instructions to the committee, was read from the Transactions of the North Carolina State Medical Society.

Dr. McKay directed the following question to Mr. J. M. Woolery, Actuary, North Carolina State Insurance Department: "If the insurance associations would consider a merger are there any hazards that would prevent such a merger?" Mr. Woolery stated that it was his opinion that there would be no hazards connected with the merging of the three hospital associations into one large association and that if it were finally decided upon it could be done without difficulty.

There followed a discussion in which all those present participated, and which revealed the consensus of opinion to be that a merger of the three hospital associations into one strong, non-profit organization would benefit both the associations and the medical profession. The representatives of the three associations expressed their belief that their organizations would consider any reasonable merger plan.

Following adjournment of the above conference an official meeting of the committee from the State Medical Society was called, which passed the following resolution:

"That the committee on merger, composed of Dr. Paul McCain, Dr. Julian Moore, and Dr. Hamilton W. McKay, requests the President of Hospital Care and Hospital Saving to appoint one man from each respective Board of Directors and these two representatives in turn should select a neutral insurance advisor. That these three men, after making a thorough study of the two associations

and the insurance needs of the people, hospitals and doctors of the state at large, should draft a plan for the proposed merger. Said plan should then be submitted to the committee appointed from the North Carolina Hospital Association and to our committee appointed by the North Carolina State Medical Society. If the proposed plan is approved by these two committees it would then be submitted to the Board of Directors of Hospital Care, Hospital Saving and Medical Service for their approval or disapproval."

FIFTH DISTRICT MEDICAL SOCIETY

Brigadier-General H. C. Coburn, Jr., Post Surgeon at Fort Bragg, was host to the Fifth District Medical Society at its Fall meeting, held on October 1. The meeting consisted of a two-hour scientific program and an inspection of the medical units, followed by supper.

SIXTH DISTRICT MEDICAL SOCIETY

The annual meeting of the Sixth District Medical Society was held at the State Hospital at Dix Hill on September 18. A Clinic on "Mental Disturbances Most Often Seen in Private Practice" was presented by the staff of Dix Hill, and the following papers were read:

Some Considerations of Renal Stones—Dr. W. M. Coppridge, Durham

Atypical Pneumonia—Captain H. A. Grennan, Fort Bragg

The Pathologic Physiology of Certain Gastro-Intestinal Symptoms—Dr. Paul Whitaker, Kinston

After the scientific program a business meeting was held, followed by dinner and entertainment.

Officers for 1941-42 were Dr. Verne S. Caviness, Raleigh, president; Dr. John Hunter, Cary, vice president; and Dr. Sidney Smith, Raleigh, secretary-treasurer. Dr. George Carrington of Burlington is counselor for the Sixth District.

CABARRUS COUNTY MEDICAL SOCIETY

The Cabarrus County Medical Society had a watermelon feast at Parkwood August 18 and invited the doctors' wives and nursing and office staff of the Cabarrus County Hospital. This Society meets the first Tuesday of each month with a dinner meeting alternating between Concord and Kannapolis.

FORSYTH COUNTY MEDICAL SOCIETY

Dr. Oren Moore of Charlotte was guest speaker at the first Fall meeting of the Forsyth County Medical Society, held in Winston-Salem on September 8. Dr. Robert B. Lawson and Dr. James F. O'Neill, both of the faculty of the Bowman Gray School of Medicine, were received as new members.

GUILFORD COUNTY MEDICAL SOCIETY

A Symposium on Cardiovascular Diseases was presented by members of the faculty of the Bowman Gray School of Medicine at a meeting of the Guilford County Medical Society, held in Greensboro on September 3. Those taking part were Dr. George Harrell, Dr. John Williams, Dr. Robert McMillan, and Dr. Tinsley Harrison.

MOORE COUNTY MEDICAL SOCIETY

The Moore County Medical Society held a business meeting on August 24. A letter from Dr. Ross S. McElwee relative to the resolution adopted by the State Medical Society in Charlotte urging that discarded surgical instruments be collected and contributed to the war program was read. Dr. C. R. Monroe made a motion that the society cooperate with the State Committee which was collecting such equipment, and he was appointed to collect discarded instruments from the doctors in Moore County, to be forwarded to Dr. McElwee.

Dr. F. L. Owen moved that the society give all assistance possible to the National Physicians' Committee in getting pre-election promises of North Carolina's representatives in Congress to prevent the political control of medicine. The motion was carried. The society gave a vote of thanks to Dr. Monroe for his contribution to national defense (see "Hotels Into Hospitals", North Carolina Medical Journal 3:397 (August) 1942).

A. M. A. MEETING CANCELLED

Notice has just been received that the 1943 session of the American Medical Association, scheduled to be held in San Francisco, has been cancelled. An official meeting of the House of Delegates will be held in Chicago at a time to be announced.

AMERICAN ACADEMY OF PHYSICAL MEDICINE

The American Academy of Physical Medicine will hold its Twentieth Annual Scientific Session at the Hotel Statler, Boston, October 14 to 17, 1942. The program will be composed of clinical and scientific presentations involving techniques of importance in Wartime Medicine.

Topics of the discussions and demonstrations include Physical Medicine in relation to Aviation Medicine, Physical Education, Habilitation, Rehabilitation, First Aid, and War Injuries, as well as consideration of the use of physical agents in injury and disease falling within the scope of various medical specialties. There will be symposia on Poliomyelitis and Electrosurgery, Encephalography, Electroshock, Fever Therapy, and Other Special Procedures will be discussed by outstanding authorities.

Speakers will include pioneers in the development of physical medicine in the earlier World War, physicians actively concerned with military medicine, and leaders in the special medical fields. A clinic will be conducted at the Massachusetts General Hospital. The Academy will have the cooperation of the Massachusetts Institute of Technology and other Medical and Scientific Institutions.

Captain William Seaman Bainbridge, M.C., U.S.N., is the President. The Chairman of the Committee on Program is Lt. Col. William D. McFee, M.C., U.S.A.R. Physicians are invited to attend without registration fee. A copy of the official program can be obtained from the Secretary-Treasurer, Herman A. Osgood, M.D., 144 Commonwealth Avenue, Boston, Mass.

MEDICAL SOCIETY OF VIRGINIA

The Medical Society of Virginia held its annual meeting in Roanoke October 5, 6, and 7, with headquarters at the Hotel Roanoke.

AUXILIARY

PROGRAM SUGGESTIONS FOR 1942 - 1943

The following is a statement from the National Program Chairman, Mrs. William Hibbitts: "This year, the doctors' wives are spending their time and thought in winning the war . . . Health education is one of the main objectives of the Woman's Auxiliary of the American Medical Association. Furtherance of this program shall be our wartime program." With this ever in mind, your State Program Chairman is relaying, and stressing, for you, many suggestions from Mrs. Hibbitts—and adding comments and further suggestions, bearing particularly on county programs within North Carolina.

County Program Chairmen:

1. Please send your name and address, and the name of your County Auxiliary to your State Program Chairman (whose name and address appears at the end of this article) at once, so that she may make a complete file for use throughout the year.

2. Supply yourselves with the following basic program material:

- a. *Handbook* for State Auxiliaries—information on organization and duties of officers—Central Office, Room 410, East Ohio Street, Chicago, Illinois.
- b. *Bulletin*—information and program material from National Officers and Chairmen—Central Office, Room 410, East Ohio Street, Chicago, Illinois.
- c. *Hygeia*—the Health Magazine—program material.
- d. *"Be Informed"*—material for quiz programs—Mrs. William Hibbitts, 2524 Wood Street, Texarkana, Texas.
- e. *The Journal of the American Medical Association*, Auxiliary Section.
- f. *North Carolina Medical Journal*, Auxiliary Section—Both A.M.A. and N. C. Journals come to your husband's office and contain information on National and State Auxiliaries, respectively.

3. Build your program around these subjects:

Organization.

Local health problems, particularly those made acute by military and defense plants.

Health and defense work.

New changes in medical government.

New medical legislation.

How women can help control inflation.

How medicine is practiced by our good neighbors in South America and Canada.

Defects of war in the English People.

How the American doctor is helping to win the war.

New war medicine—New medical methods which have been developed during the war.

Morale and mental hygiene.

"What Is a Physical Health Examination?"

"Rules of the Game"—can be obtained from American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

How the American public, and especially the doctors' wives may keep fit by having a yearly check-up.

Current medical events.

Timely book reviews on medical subjects.

"Doctors at War" broadcast by American Medical Association.

The Survey of Women's Health Interest, which has been compiled by the Bureau of Health Education of American Medical Association.

"Pioneer Local Doctors"—special program for Doctors' Day.

4. Confer with your County Legislation Chairman and your County Public Relations Chairman when planning your program.

5. Ask your Advisory Council to approve your plans.

MRS. JOSEPH A. ELLIOT,

State Program Chairman,

2700 Sherwood Avenue, Charlotte, N. C.

Peptic Ulcer Film Available

There is now available for free showings before groups of physicians the first complete film on peptic ulcer, in color and with sound track.

The film is entitled "Peptic Ulcer" and was produced under the direction of the Department of Gastroenterology of the Lahey Clinic of Boston. The American College of Surgeons has awarded its seal of approval to the film.

Running time of the film is 45 minutes, 1600 feet of 16 mm. film, and covers a presentation of the following problems of peptic ulcer: Pathogenesis, diagnosis, treatment, pathology, complications, including obstruction, hemorrhage, and perforation, gastric ulcer, surgery and jejunal ulcer.

Arrangements for a showing of the film may be made by writing to the Professional Service Department of John Wyeth and Brother, Inc., Philadelphia, who will provide projection equipment, screen, film, and operator for medical groups, without charge.

BOOK REVIEWS

A Textbook of Surgery. Edited by Frederick Christopher, M.D., F.A.C.S., Associate Professor of Surgery, Northwestern University Medical School. Third Edition. 1764 pages, with 1538 illustrations on 771 figures. Price, \$10.00. Philadelphia and London: W. B. Saunders Company, 1942.

Christopher's third edition is truly a textbook of surgery. It is well illustrated and well written. Undergraduate and postgraduate students alike can profit by studying such a book. It would be difficult to enlist the aid of a more able group of contributors than those represented in this one volume. It is impossible in writing a brief review even to mention the parts of the book that make the strongest appeal. It is sufficient to say that all parts are adequately and some brilliantly written. The chapter on war injuries is timely and valuable. The list of references is generous, up-to-date and well selected.

Hughes' Practice of Medicine. Ed. 16. Revised and edited by Burgess Gordon, M.D., Clinical Professor of Medicine, Jefferson Medical College, with sections on nervous and mental diseases by Harold D. Palmer, M.D., Professor of Psychiatry, Woman's Medical College, and on diseases of the skin by Vaughn C. Garner, M.D. 791 pages. Price, \$5.75. Philadelphia: The Blakiston Co., 1942.

The passage of this textbook through sixteen editions is eloquent evidence of its popularity. It presents in a more concise form than is usual in similar texts the clinical features and the treatment of disease. The definition, etiology, symptoms, diagnosis and treatment of clinical disorders are summarized. As is inevitable in any text covering so vast and specialized a subject as medicine, numerous petty errors are encountered. For example, no mention is made of hyperostosis frontalis nor of hepatic disease as a cause of non-diabetic glycosuria. Scleroderma is described as a trophoneurosis in which "dysthyroidism" may play a part, and parathyroidectomy, injection of posterior pituitary liquid, and iontophoresis with mechoyl are suggested among therapeutic measures of value in this disorder. In spite of such errors the book should prove of value to the medical student and practitioner. The inclusion of sections on mental diseases, dermatology, and physical diagnosis of the chest makes the book more completely rounded than is the usual textbook of medicine.

Standard Nomenclature of Diseases and Standard Nomenclature of Operations. Edited by Edwin P. Jordan, M.D. 1022 pages. Chicago: American Medical Association, 1942.

This compendium has been prepared by a committee of the National Conference on Nomenclature of Disease in order to establish a logical clinical nomenclature. About 3500 additions, deletions and corrections have been made in the present edition. The importance of a complete classification of medical records needs no comment, for unless they are well indexed, such records are of little value in clinical research. The volume under review should be in the hands of every medical record librarian, and every case history should be classified according to its specifications before being filed.

Advances in Internal Medicine, Volume 1. Edited by J. M. Steele, M.D. 292 pages. Price, \$4.50. New York: Interscience Publishers, Inc., 1942.

This book represents the first volume of a new series of reviews of progress in various fields of internal medicine. The editor has been assisted by seven associate editors, among whom is Dr. Tinsley R. Harrison, of the Bowman Gray School of Medicine of Wake Forest College. The subjects covered in the present volume are: "The Use of the Miller-Abbot Tube", by W. Osler Abbott; "The Use of Insulin and Protamine Insulin", by P. H. Laviertes; "The Sympathetic Nervous Control of the Peripheral Vascular System", by R. W. Wilkins; "The Antibacterial Action of the Sulfonamide Drugs", by C. M. MacLeod; "The Choice of the Sulfonamides in the Treatment of Infection", by C. S. Keefer; "Infections of the Urinary Tract", by L. A. Rantz; "Present Trends in the Study of Epidemic Influenza", by T. Francis, Jr.; "Hypertension", by I. H. Page and A. C. Corcoran; "Nephrosis", by L. E. Farr; and "Riboflavin Deficiency", by H. Jeghers. Author and subject indices are appended.

As is evident from the cited list of essays, this book covers a number of the subjects in which progress has been made in recent years. It offers the internist not actually engaged in research in these fields an opportunity to acquaint himself with recent advances.

The editors and publishers are to be congratulated for the excellence of their new contribution to medical literature, and it is to be hoped that future volumes will maintain the high standard shown by this first volume.

The Autonomic Nervous System. By James C. White, M.D., Assistant Professor and Tutor in Surgery, Harvard Medical School, Chief of Neurosurgical Service, Massachusetts General Hospital; and Reginald H. Smithwick, M.D., Instructor in Surgery, Harvard Medical School. Ed. 2. 469 pages. Price, \$6.75. New York: The Macmillan Company, 1941.

In this new edition of *The Autonomic Nervous System* the authors have extensively rewritten their original work and have extended considerably the scope of material covered.

The volume is divided into three parts:

Part I is devoted to a general consideration of the anatomy, physiology, and pharmacology of the nervous system, and is concluded with a description of apparatus and an outline of methods employed in a study of the system.

Part II deals with various pathological conditions in which interruption of the autonomic supply to the region concerned is or is not a recommended procedure. This section contains a most comprehensive review of the literature relative to the autonomic involvement in such conditions as peripheral vascular disease, hypertension, and diseases of the brain, meninges, spinal cord, heart, and aorta.

Part III contains descriptions of the surgical technique involved in sympathectomy.

The book is well written and readable. While it is chiefly directed to the surgeon and specialist, it will benefit the general practitioner by acquainting him with the conditions in which the autonomic system is involved and in which surgery has been demonstrated to be beneficial.

Manual of Standard Practice of Plastic and Maxillofacial Surgery. Prepared and Edited by the Subcommittee on Plastic and Maxillofacial Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council, and Representatives of the Medical Department, U.S. Army. 432 pages. Price, \$5.00. Philadelphia: W. B. Saunders Company, 1942.

This is the first volume of a series of five sponsored by the Medical Department of the U.S. Army. It is a concise description of the accepted methods used in this type of surgery. This volume is divided into four sections. The first, on reconstructive surgery, is by far the most detailed and probably the most important. It includes a general consideration of injuries as well as detailed description of specialized procedures. The authors waste little time in discussing different types of procedure, but give the technique of what they consider to be the best procedure in each case. Section two is devoted to maxillary surgery, including that of gunshot wounds of the jaws and fractures of the jaws. Section three deals with maxillofacial prosthesis. The last section is devoted entirely to anesthesia.

This volume contains a wealth of information and should be of the greatest value to the general surgeon who is called upon to do specialized reconstructive surgery. It is profusely illustrated with excellent pictures of deformities and drawings of various procedures. It is a book that one practicing this type of surgery cannot afford to be without.

New Paths in Genetics. By J. B. S. Haldane, F.R.S. 206 pages. Price, \$2.50. New York: Harper & Brothers, 1942.

This book, the latest of Professor Haldane's writings, is based on a series of lectures given in the University of Groningen, Holland, in March, 1940. His ambitious plan is to correlate the science of genetics with the older and more established sciences, and to point out promising paths for future investigation.

After a general introduction to the subject, including a statement of the aims and purposes of geneticists, the relations of genetics and biochemistry are discussed, with emphasis on the apparent genetic control of the metabolism of phenylalanine and tyrosine. The chapter on "Genetics and Development" summarizes a large amount of experimental data on the genetic aspects of embryology. The final third of the discussion is concerned with the genetics of certain human abnormalities, including hemolytic anemia, peroneal atrophy, retinitis pigmentosa, mongolism, and others. The section on the more formal genetics of man gives an understandable introduction to the statistical treatment of pedigree data.

Although about half of the material in this book has no direct application to medicine, there are numerous suggestions of possible analogy between certain situations in man and in experimental animals. As the subject matter was originally delivered as a lecture series, it is not intended to be an exhaustive treatment of the topics discussed. Professor Haldane has understandably given considerable prominence to the work of the English investigators who have from time to time been associated with him. The entire discussion is presented in a readable style and should be of value to anyone interested in the biological sciences. An adequate subject and author index is appended.

The Care of the Aged (Geriatrics). By Malford W. Thewlis, M.D., Attending Specialist, General Medicine, U. S. Public Health Hospitals, New York City. Fourth edition, thoroughly revised with 50 illustrations, 589 pages. Price, \$7.00. St. Louis: The C. V. Mosby Co., 1942.

Only a year has elapsed since the third edition of this book appeared. The present edition has been altered by the addition of supplementary material and references on several subjects of recent medical interest. The important contribution which can be made by old people in the all-out war effort augments the importance of a knowledge of Geriatrics. This well-written review of the care of the aged and their diseases is, therefore, a timely book for the general practitioner.

Digestive Disease in General Practice. By John H. Willard, M.D., F.A.C.P., Physician-in-Chief, Gastroenterologic Service, Abington Memorial Hospital. With a foreword by George Morris Piersol. Price, \$5.50. 449 pages, with 101 illustrations, 14 in color. Philadelphia: F. A. Davis Co., 1942.

The frequency with which patients present symptoms referable to the gastrointestinal tract should make the present book a desirable addition to the general practitioner's library. The book was designed for use in everyday practice and the author has succeeded admirably in fulfilling this purpose. All phases of gastro-enterology, including diagnosis, history taking, evaluation of symptoms, practical aids in examination, the use of special laboratory and diagnostic procedures, and details of therapy, are discussed. In spite of its relative brevity, as compared to larger textbooks, the significant facts are all correlated in a clear and concise fashion with detailed descriptions of procedures to be carried out by the practitioner. Useful laboratory procedures, dietary data on the vitamins, and special diets are included in the appendix. The book should prove of value in the everyday practice of every practitioner.

The Interaction of Drugs and Cell Catalysts. By Frederick Bernheim, Ph.D., Associate Professor of Physiology and Pharmacology, Duke University School of Medicine. 85 pages. Paper, \$2.25. Minneapolis: Burgess Publishing Co., 1942.

In this monograph the author reviews the literature pertaining to a new approach to the problem of drug actions, and has filled a need long felt by those interested in this field. The action on tissue enzymes of many drugs such as eserine, prostigmine, morphine, strychnine and cyanide are described, and their effects on bodily functions are at least partially explained on this basis. The effects of tissue enzymes upon such drugs as acetanilid, histamine, atropine and adrenalin in relation to their inactivation in the body are also discussed. The interest in this method of studying drug actions is increasing rapidly, and this summary of the literature is timely in that problems yet unsolved are emphasized. Students and those interested in these problems will find it a valuable reference work.

Facts for Childless Couples. By E. C. Hamblen, M.D., Associate Professor of Obstetrics and Gynecology, Duke University School of Medicine. 103 pages. Price, \$2.00. Springfield, Ill.: Charles C. Thomas, 1942.

This booklet is intended to give the intelligent patient an idea of the present scientific status of the problem of sterility. It outlines briefly the complex factors which must be analyzed in order to evaluate the cause of infertility in any patient. Although the book is within the grasp of the better educated patient, it is doubtful if it is written in a sufficiently popular style to be intelligible to the average patient. The general practitioner, however, may profit by perusing this interestingly written booklet so that he may better advise patients who consult him for this very common disorder.

ARMY-NAVY "E" PENNANT PRESENTED TO SQUIBB

Presentation of the coveted Army-Navy "E" Pennant to E. R. Squibb and Sons was witnessed by more than 2,000 employees in the grand ballroom of the Waldorf-Astoria Hotel, New York City, on Friday night, September 18. The pennant was presented by Rear Admiral Harold W. Smith, (MC) USN, Chief of the Navy's Research Division of Bureau of Medicine and Surgery, to Carleton H. Palmer, Chairman of the Squibb board.

With the pennant went insignia of excellence to each of the employees of the company which manufactures critical drugs, biologicals, and other medical essentials for the armed forces. Brig. General Larry B. McAfee, Assistant to the Surgeon General of the United States Army, presented token "E" buttons to four employees—three women and one

man—selected from four Squibb departments in which service entails personal hardship and risk of health and even life in supplying of medical needs for the Army and Navy.

One of the pin recipients was Miss Anna Master-son, employed in the manufacture of anti-typhus vaccine.

"Not one Squibb worker engaged in this perilous occupation escapes the typhus infection," declared General McAfee in giving Miss Masterson her button. "To some degree or other—each becomes ill—distressingly ill—may even die. They face this distress—this peril, to protect others."

Citing the fact that many of the workers in the Squibb "civilian army" are in peril "every minute of every hour of every working day," General McAfee told of the task of Miss Lotti Kuras, who has two brothers in the Army and one in the Navy. Miss Kuras "fills glass ampuls with a liquid that must be handled at a temperature of ninety degrees below zero—then sealed with a searing hot flame" said General McAfee, declaring that "despite every precaution known, everyone engaged in this delicate hazardous work at some time or other is cruelly, painfully, sometimes dangerously burned by the excessive heat or cold."

The only male recipient was George Brown, employed in the Sulfathiazole division. Also receiving a pin from General McAfee was Miss Mary Murtha, who works in the laboratories which prepare hypodermic solutions.

Speaking of the danger faced by Squibb employees, despite their civilian status, General McAfee said: "They face this distress—this peril—to protect others. A soldier can do no more! This Army-Navy "E" for excellence seems a mild reward—a modest citation for your perilous occupation."

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OSTEOMYELITIS OF THE FRONTAL BONE

E. A. THACKER, M. D.

GOLDSBORO

The valuable information given to us by leading otolaryngologists within the past ten to fifteen years has revolutionized the treatment of osteomyelitis of the frontal bone.

Etiology

Osteomyelitis of the frontal bone occurs most frequently in individuals below the age of 30. The acute, fulminating type is more apt to follow swimming or trauma. Acute and chronic sinusitis, as well as certain frontal sinus surgical procedures may also initiate an osteomyelitic complication.

The organisms responsible for osteomyelitis of the frontal bone are, in this order of frequency: *Staphylococcus aureus*, *streptococcus*, and *pneumococcus*.

Anatomy and Avenue of Infection

There is not much evidence of development of the frontal sinus above the orbital ridge before the sixth year. The ethmoid cell which becomes the frontal sinus may obtain considerable size before ascending into the perpendicular portion of the frontal bone⁽¹⁾. The greater susceptibility of some persons to osteomyelitis following sinusitis can be attributed to extensive development of diploe in the frontal bone and walls of the frontal sinuses⁽²⁾, particularly in women and children. There are two large diploic veins

in the frontal bone—the frontal and anterior temporal, called veins of Breschet—through which the infection is very apt to travel. The diploic veins connect with the dura and periosteum.

Pathology

Pus and granulation tissue fill the diploe, causing actual necrosis, within seven to ten days⁽³⁾. If the infection travels through the outer table, the haversian canals as well as the veins of the scalp become thrombosed. A retrograde thrombosis may progress into the neighboring bone and into the extradural network, producing isolated islands of osteomyelitis in advance of the process in the inner table. The bone may become dark and abscesses may dissect the dura and periosteum from the bone.

The microscopic picture may be summarized as follows:

- (1) Edema of the myeloid tissue occurs first.
- (2) An inflammatory reaction is present in which there is hemorrhage and thrombosis within the spongy bone.
- (3) Absorption of bone and production of granulation tissue follow.
- (4) Sequestration occurs later.
- (5) Osteoclasts and osteoblasts are both active in the diseased bone.
- (6) The infection may extend one and one-half inches past the area of necrosis.

Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

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Symptoms

Osteomyelitis of the frontal bone has been classified into the fulminating, the localizing, and the spreading types⁴¹. In fulminating osteomyelitis there is usually a history of swimming, trauma and sinusitis with intense pain and headaches, and a high fever of a septic nature. There is a rapidly spreading edema over the frontal area with a tendency to spread early to the arachnoid and cranial sinuses. A high leukocyte count is present.

The localizing or self limiting type is milder. Usually a smaller area is involved and the process becomes stationery. The spreading type of osteomyelitis produces a clinical picture of progressive edema of the frontal area, but the patient does not appear very ill. However, these milder forms may change at any time to the fulminating type. There is always grave danger of complications from any of these types. Since one type may merge into another, it is best to consider them as various stages of the same disorder and to deal with them by radical surgery as soon as this is feasible.

The first sign of osteomyelitis of the frontal bone is a pitting edema (Pott's puffy tumor) which is soft and doughy. Severe frontal headaches are reported to be a rather constant feature, but, as in the case herein reported, headaches may be absent. Seven to ten days generally elapse before bone necrosis has progressed sufficiently to produce positive x-ray findings.

Complications

Extradural abscess is the most common complication of osteomyelitis of the frontal bone. It may be present for some time without producing any symptoms. Unless the abscess is extremely large, the symptoms of intracranial pressure are not present. By far the majority of such abscesses go undiagnosed until the frontal bone is removed during operation for the osteomyelitis. This is the least dangerous of the complications.

Meningitis is not an uncommon complication. The classic findings are so well known that they need not be repeated here. Recoveries are quite frequent when the sulfonamides are administered early.

The symptoms of frontal lobe abscess may be vague when it develops in the silent areas. Headache is a prominent complaint, and is

usually of a boring type and worse at night. In the early stage, there may be chills and some fever. The symptoms practically disappear during the latent stage, which may last from a few weeks to several months. When the manifest stage appears, there is another rise in the temperature and the pulse becomes slow—indicative of intracranial pressure. Personality changes, vomiting, convulsions, and epileptiform seizures may also occur. The finding of optic neuritis, choked disc, dilation and tortuosity of the retinal veins will aid in making the diagnosis. Ventriculograms are helpful. If there is evidence that the brain is under increased pressure when the dura is uncovered during the operation for osteomyelitis, needling of the frontal lobe in the area where granulation is present on the dura will often locate such an abscess. The mortality in frontal lobe abscess is very high.

Mortality

The high mortality rate in osteomyelitis of the frontal bone is due largely to the complications. I have analyzed the mortality rate in three ways: (1) in cases following sinus surgery; (2) according to the causative organism; (3) according to the type of operation performed for the osteomyelitis. Such statistics must be interpreted liberally, since so many variable factors play an important role.

According to reports in the literature⁴⁵, the mortality rate in osteomyelitis of the frontal bone following sinus surgery is high—from 79 to 100 per cent. The entrance into the frontal sinus by the Ogston-Luc or Killian technique is through the anterior wall, which is diploic or spongy; consequently avenues for the spread of infection are opened. Injury or elevation of the overlying periosteum predisposes to osteomyelitis by interfering with nutrition of the bone. The destruction of portions of the frontal diploic veins could in itself initiate an osteomyelitic process. In the Lynch type of operation, the

5. (a) Bulson, A. E., Jr.: Osteomyelitis of the Frontal Bone as a Complication of Frontal Sinusitis, *Tr. Am. Acad. Ophth.* 31:102, 1925.
- (b) Furstenberg, A. C.: The Treatment of Acute Nasal Accessory Sinus Disease, *Ann. Otol. Rhin. & Laryng.* 47:902-909 (Dec.) 1938.
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- (d) Lillie, H. L.: Osteomyelitis of Cranial Bones Secondary to Paranasal Sinus Operations, *Ann. Otol., Rhin. & Laryng.* 31:353-360 (June) 1925.
- (e) McNally, W. J.: Some Considerations Concerning Acute Frontal Sinusitis, *Tr. Am. Laryng. A.* 56:97-123, 1931.

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entrance to the frontal sinus is through the thin non-diploic bone of the floor. There is less danger of osteomyelitis, because the nutrition of the outer sinus walls is supplied by the undisturbed periosteum, and no avenues for infection through the diploe have been opened. Osteomyelitis resulting from intranasal frontal operations probably occurs because of the trauma caused by the rasp, which grinds or rubs the infection into the bone.

Apparently streptococcic osteomyelitis of the frontal bone produces a higher mortality than staphylococcic osteomyelitis. Most of the reports in the literature appeared before chemotherapy with sulfonamide derivatives supported our therapeutic armamentarium.

Table 1

<i>Mortality According to Types of Surgery</i>	<i>Mortality Rate</i>
Conservative surgery	
All cases reported from 1895 to 1925	60-75%
MacMillan ⁽⁶⁾	58%
Kazanjian and Converse ⁽⁷⁾ , 6 cases	83%
Radical or complete surgery	
Furstenberg ⁽²⁾ , 14 cases	43%
Behrens ⁽⁸⁾ , 7 cases	28.5%
MacMillan ⁽⁶⁾ , 17 cases, 2 cases with meningitis before operation	25%
With these 2 cases deducted	12.5%
Mygind ⁽⁹⁾ , 13 cases	15%
Schmidt ⁽¹⁰⁾ , 12 cases	16.6%
McKinney ⁽¹¹⁾ , 8 cases	37%
Kazanjian and Converse ⁽⁷⁾ , 8 cases	0
Jones ⁽¹²⁾ , 7 cases	0
Stevens ⁽¹³⁾ , 3 cases	0

Notice the relatively low death rate reported in cases in which radical surgery was employed. McKenzie⁽¹⁴⁾ sponsored such a procedure in 1913.

Prognosis

The prognosis in osteomyelitis of the frontal bone resulting from infection of the sinuses should be guarded because of the

danger of intracranial complications. Early diagnosis and complete removal of the diseased bone well beyond the infected area certainly reduces the probability of intracranial complications. Chemotherapy, transfusions and other necessary supportive treatment have reduced and will tend to reduce further the loss of life from this disease.

Treatment

As has been shown by recent contributions to the literature, wide excision well past osteomyelitic bone should be made. Several types of incisions for the removal of the diseased frontal bone have been sponsored. The U-shaped incision demonstrated by Skillern⁽¹⁵⁾, is made so that the lower part of the U runs along the supra-orbital ridge. In the inverted U or coronal incision, sponsored by Kettel⁽¹⁶⁾, the cross portion of the incision is above the hair line of the forehead. The inverted T incision with rounded angles above the eyebrows, which is now used at the Massachusetts Eye and Ear Infirmary⁽⁷⁾, is the most satisfactory for the following reasons:

- (1) It allows adequate inspection of the bone edges during the dressing for the period the wound is left open.
- (2) Excellent exposure can be made for the removal of bone if there is further extension of the osteomyelitic process.
- (3) It affords excellent drainage.
- (4) Good plastic closure can be obtained by criss-cross incision of the under side of the flaps. The scar may be small or may be quite noticeable, but the advantages far outweigh this disadvantage.

The removal of the diseased bone can be done by a Gigli saw or with rongeur forceps after the periosteum is first elevated and reflected. The superior longitudinal sinus is easily separated from the bone. Frontal sinus walls should be removed. Care should be taken to protect the dura. Any granulations should be removed and the wound irrigated with normal saline and an antiseptic. The dura is then covered with vaseline gauze or paraffin mesh to prevent the skin flaps and periosteum from adhering to the dura. At each dressing thereafter, the bone edges

6. MacMillan, A. S.: Osteomyelitis of the Skull Following Frontal Sinusitis, J. A. M. A. 115:1176-1178 (Oct. 5) 1940.
7. Kazanjian, V. H. and Converse, J. M.: Reconstruction After Radical Operation for Osteomyelitis of the Frontal Bone, Arch. Otolaryng. 31:94-112 (Jan.) 1940; also Tr. Sect. Laryng., Otol., & Rhin., A. M. A., pp.163-183, 1939.
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11. McKinney, R.: Osteomyelitis of the Frontal Bone, Arch. Otolaryng. 28:1-9 (July) 1938.
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13. Stevens, J. B.: Osteomyelitis of the Frontal Bone: Report of Three Classified Cases, Arch. Otolaryng. 33:694-706 (May) 1941.
14. McKenzie, Dan: Diffuse Osteomyelitis from Nasal Sinus Suppuration, J. Laryng. 28:6, 79 and 129 (Jan.) 1913.

15. Skillern, S. R.: Osteomyelitic Invasion of the Frontal Bone Following Frontal Sinus Disease, Ann. Otol., Rhin. & Laryng. 48:392-411 (June) 1939.
16. Kettel, K.: Osteomyelitis of the Frontal Bone, Surgical Treatment: Which Way of Approach is Best? Arch. Otolaryng. 31:622-625 (Apr.) 1940.

are inspected and any unhealthy appearing granulations and diseased bone are removed. The wound should be left open one month or longer, after which time the closure may be done if the bone and granulation tissue appear healthy. Mosher believes that three months should elapse before closure should be considered. The flaps will have retracted considerably. Criss-cross incisions on the under side of the flaps, described by Kazanjian and Converse, will allow the edges to be brought into close approximation. The flap edges should be freshened to allow free bleeding before being sutured. Rubber dam drains should be used at the outer angles so that any serum accumulation may drain. With the delayed closure there is much less danger of abscess pockets, brain abscess or necessity for reoperation for recurrent osteomyelitis. Dolman and others have used bacteriophage intravenously and locally with good results. Frequent blood transfusions are beneficial. Chemotherapy with the sulfonamide derivatives should be used. Close cooperation between the otolaryngologist and the pediatrician or internist will add to the patient's safety.

An external protector of a light plastic material or aluminum should be worn, particularly by children, until regeneration of bone has occurred, or until a plastic transplant operation is done. Furstenberg and Kettel have found that bone regeneration occurs quite frequently. Mosher had only two cases of bone regeneration, both in children. Adults are not so apt to repair the loss of bone as are children. Plastic transplants should not be considered sooner than one to two years after the original operation, as it frequently takes around eighteen months for new bone formation to fill the defect.

The following case is reported because of the unusual development of osteomyelitis complicating sinusitis in a child less than 6 years of age. This case further emphasizes the value of early diagnosis and proper treatment.

Case Report

A 5½ year old boy who had been ill for about a week was admitted to the hospital on July 13, 1941, with the complaint of fever and slight frontal headache. He had been subject to frequent colds and fever and bronchial cough for two years. The temperature on admission was 102 F., the pulse 120, and respirations 26. Moderate nasal congestion

was present, with only a small amount of tenacious mucopurulent exudate. The tonsils were hypertrophic and injected. Large adenoids were present. The blood picture revealed a leukocyte count of 9550 with 84 per cent polymorphonuclear leukocytes and 16 per cent lymphocytes; there were 3,383,000 erythrocytes and a hemoglobin of 76 per cent. An x-ray of the sinuses showed the right antrum cloudy, and bilateral ethmoid infections. The frontal sinuses were barely visible about the orbital ridge.

Conservative sinus treatment was instituted, and sulfathiazole was given. The child never complained of headache after the first day in the hospital. Edema of the right upper eyelid and tenderness in the fronto-ethmoidal region appeared on July 16. The leukocyte count was 11,500. Roentgenographic studies did not show any change from the previous pictures. An antrum puncture and lavage were done on the right maxillary sinus on July 19 and 23. A very thick yellowish gray pus was obtained, which contained *Staphylococcus aureus* on culture.

On July 28, there was fluctuation, and the orbital abscess was drained through the right upper eyelid. Amputation of the anterior tip of the right middle turbinate was done. The anterior ethmoid cells were opened and a naso-antral opening into the maxillary sinus was made. The child improved rapidly, and he was allowed to go home in a few days, to return at intervals for observation and treatment of the sinuses. On August 12, there was some swelling in the midline of the frontal region with slight tenderness, but no headache. A feeling of roughness was noted in the area where the right and left large diploic veins are located. X-ray of the skull showed erosion of the outer table of the frontal bone. The temperature had risen to 99.2 F., and the laboratory reported a leukocyte count of 7,550 and 3,560,000 erythrocytes.

Four days later, under ether anesthesia, an inverted T incision was made according to the technique used at the Massachusetts Eye and Ear Infirmary. The periosteum was reflected and sutured to the skin flaps. The frontal bone was found to be eroded down almost to the orbital ridges. The inner table was perforated in the midline and granulations were found on the dura at this point. The dura otherwise appeared normal, and the brain was not under tension.

The anterior and posterior walls of the small frontal sinuses were carefully removed. The sinuses contained much polypoid degenerative mucosa. The frontal bone was removed one-half to one inch into apparently healthy bone, except for the orbital ridges which were conserved to minimize the deformity. The dura and wound were irrigated with normal saline solution during the operation. Paraffin gauze was placed between the dura and the skin flaps, and sterile dressings were applied.

The patient continued to run low grade fever for about one week, but felt good and had no headache. Sulfathiazole was given during this time. The bone at the outer angle of the right orbital ridge became affected. This was removed well into apparently healthy bone on September 4. There was no recurrence of fever and the plastic closure was performed on September 16, one month after radical operation.

One transfusion was given during the operation, another on August 19, and a third of 300 cc. two days after the plastic closure. The temperature returned to normal two days after the wound was closed, and to the date of writing has remained normal. The patient was discharged from the hospital on the ninth day after the plastic closure, feeling perfectly well. An aluminum shield was fitted for the operative area. This has been worn since that time. X-rays of the ethmoids and antrums were negative on September 27.

Eight months have elapsed since the wound was closed. The patient has been perfectly well with the exception of one mild cold during the winter. It is too early to tell whether or not there will be regeneration of the bone.

This case emphasizes several important points.

(1) Osteomyelitis of the spreading type can develop insidiously, with the temperature and leukocyte count remaining normal or with a very slight rise.

(2) The pitting tumor over the frontal region was the first clinical evidence of osteomyelitis. The erosion of the outer plate along the veins of Breschet could be palpated.

(3) There was no headache during the development of osteomyelitis in this child, even though there were granulations on the dura.

(4) The outer angle (temporal portion of

the frontal bone) must be especially watched for the spread of the osteomyelitic process and removed as soon as it is evident.

(5) Even though the pansinusitis was staphylococcal in origin, prolonged treatment with sulfathiazole did not prevent the occurrence of osteomyelitis. Whether it prevented further spread after surgery was performed is a matter of conjecture.

(6) An unusual feature of this case is the fact that there was very little drainage from the nose. The antrum irrigations revealed a thick heavy grayish material of the type which settles out in bronchiectatic sputum. A diagnosis of sinusitis was first made by x-ray.

(7) The pediatrician and internist must be ever watchful for acute sinusitis in young children as a complication of coryza or of the acute exanthematous diseases, since the ethmoids and maxillary sinuses are fairly well developed in early life. Osteomyelitis of the frontal bone may result from ethmoid and frontal sinusitis, even though the latter may be only partially developed in children as young as $5\frac{1}{2}$ years of age.

(8) Conservative treatment by antral irrigations, amputation of the anterior tips of the middle turbinate, and external drainage of the orbital abscess brought clinical improvement in this patient.

(9) The value of delaying closure of the wound for at least one month is brought out. It allows inspection of the bone edges when dressings are done, which is much more valuable than depending upon x-ray findings. Any unhealthy granulation tissue which may accumulate on the dura can be removed.

(10) The early diagnosis, the good physical condition of the patient at the time of the osteomyelitic development, and the immediate radical surgery were salient factors in this patient's recovery.

Abstract of Discussion

Dr. V. K. Hart (Charlotte): I think it can be said that we have three schools of thought regarding the treatment of osteomyelitis of the frontal bone: the ultra-conservative, the more moderate group, and the radical group. In the ultra-conservative group there are some who believe that in the early stage we should use nothing but conservative treatment.

The second school of thought holds that in the fulminating type of osteomyelitis it is good judgment and good surgery to do simple drainage of the frontal sinus and then wait for stabilization of the process before doing the radical surgery.

The third group has perhaps been best exemplified in this country by Mosher. This group feels that if operation is performed it should be radical and all

diseased bone should be removed. I think Dr. Mosher has modified his views somewhat since the advent of the sulfonamides. I think he has yielded a little to the conservative school.

We have been wont to depend upon the sulfonamides too much. In cases in which the hemolytic streptococcus, the staphylococcus, or the pneumococcus is the causative organism the sulfonamides are unquestionably a valuable adjunct to therapy. However, we must not forget that some of these infections are due to the anaerobic streptococcus, and particularly those cases that begin with a dental infection. I think it is the consensus of opinion that in these cases the sulfonamides are of no particular clinical usefulness. I know of no experimental work that has shown the sulfonamides to be effective against anaerobic streptococci. Cases with frank empyema must have surgical drainage in connection with the sulfonamides. Experiments have indicated that in the presence of pus, for some chemical reason, the sulfonamides lose their effectiveness. I also believe that in these bony structures in the presence of disease it is sometimes most difficult to get a therapeutic concentration of the drug because of the interference with the blood supply. If there is an empyema of the frontal or maxillary sinus, some drainage will be necessary in addition to drugs. We cannot depend on these drugs to the exclusion of other means of treatment.

The complications can be divided into those occurring by direct extension with erosion (extradural abscess, erosion of the dura, and subdural abscess or brain abscess or both) and those occurring by retrograde thrombophlebitis, in which we find no actual destruction of the wall, but in which the infection travels back through the small veins to the dura and often into the subdural spaces or brain. We have in Memorial Hospital now a patient operated on two weeks ago who had an intracranial complication with a bilateral frontal suppurative. We did radical surgery, removing both anterior and posterior plates and exposing the dura, but we did not find any lead such as we often find. There were no localizing signs. Suddenly a few days later the patient developed a hemiplegia and a large subdural abscess over the left temporal area was drained. I think the lateral veins were the portal of entry in this infection. This complication has a high mortality. A frontal lobe abscess is the more common lesion.

I believe that the type of incision is relatively unimportant. The most important thing is to be fearless, regardless of what type of incision you use; do not be handicapped by a small incision. The question as to whether it should be left opened or closed depends on the type and extent of the involvement and is a question of clinical judgment. Certainly if there is subdural pathology, the incision should be left wide open and a plastic closure done later. In some of our cases we have done a wide excision of the bone, beyond the area of involvement, and gotten by with primary closure.

If you are going to do surgery on the ethmoids don't do it intranasally; use the radical approach by the external route so that you can see what you are doing.

Sometimes even roentgenograms won't show an early osteomyelitis, and you must depend upon the clinical picture and your own surgical judgment.

I think Dr. Thacker gave an excellent presentation and I have enjoyed it. I thank you.

Dr. Thacker: I want to thank Dr. Hart for the discussion of this paper. He has brought out several interesting points.

I want to stress the importance of sinusitis in children. In this case the pediatrician, who was an excellent pediatrician, was at a loss to know what was causing the temperature in the child because he did not have a headache after the first day in the hospital, and practically no drainage from the nose. The pediatrician should be especially watchful for sinusitis in children where they cannot find anything else wrong but where the child is running a fever. This case brought out the fact that there may not be any nasal discharge. I have confidence in sulfonamide preparations, but this child developed an osteomyelitis while sulfonamides were being administered. I agree with Dr. Hart that we must not put too much dependence in the drug.

THE RECOGNITION OF VISCERAL TRANSPOSITION

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Since the seventeenth century reports of cases of situs inversus viscerum have been accumulating, and there are now more than eight hundred articles on the subject. Many of these reports in the literature are from countries in which compulsory military training has required the physical examination of all males reaching a given age. Now that the world is at war and selective service examinations are part of the daily routine, many additional examples of this condition will be encountered, but they will not be recognized unless the examining physician is aware of the possibility and confident of his physical findings. This paper is designed to call attention to the importance of recognizing situs inversus viscerum (SIV), both in military and civilian medicine, and to suggest that it is a condition far more common than is generally supposed.

Definition

SIV is a congenital anatomical anomaly in which organs of the thoracic and abdominal cavities are transposed laterally (fig. 1) in mirror image fashion. It is not in itself a pathological condition, and life, for the affected individual, proceeds in its normal way. It is highly probable that a curious and intelligent person with SIV, living in a world predominantly populated by persons with situs solitus (normal visceral disposition), would one day recognize the dextroposition of his heart from obvious precordial pulsa-

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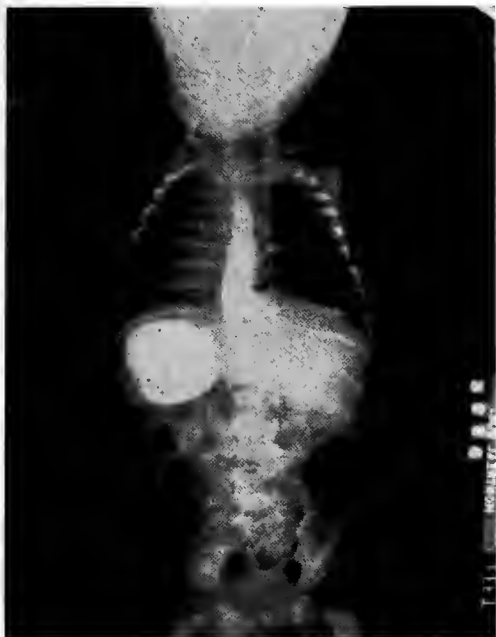


Fig. 1. (Case III) Note dextrocardia, dextroposition of the barium-filled esophagus, and exchanged position of stomach and liver.



Fig. 2. (Case XVI) True dextrocardia, transposition of the abdominal viscera. (Courtesy of Dr. P. A. Yoder)

tions after muscular exertion, and that he would seek an explanation from friends or from his physician. However, Smith and Horton tell of a 47 year old woman with SIV who attempted suicide, unaware of her abnormality. She aimed "at the place where she thought the heart was situated and where, normally it would have been situated. The bullet entered . . . the fifth interspace about 3 inches . . . to the left of the sternum . . . was removed a few days later by a surgeon." Thus it is possible for the affected individual to reach middle life without an awareness of his anatomical peculiarity. Therefore responsibility for discovery rests with the physician.

Physical Examination

In a person with SIV the apex impulse will be found on the right. This finding and the observation that the right testicle hangs lower than the left may be noted at a glance, tempting one to venture a snap diagnosis of SIV. Careful percussion of the chest and abdomen will reveal the transposition of the heart, liver, stomach, and spleen. In a thin subject the aortic transposition can be noted by palpating for aortic pulsation, which will

be felt to the right side of the middle of the vertebral column. Whereas normally the right kidney is the lower, in SIV the left kidney is lower.

Fluoroscopic examination or the record offered by an x-ray plate (fig. 2), showing dextrocardia, a gas bubble in the stomach, and the exchanged positions of liver and spleen, will provide confirmation of the tentative diagnosis from physical signs. An electrocardiogram showing inversion of lead I and an exchange of position between leads II and III is pathognomonic of the true dextrocardia of complete transposition of the viscera. Observations made at operation and autopsy, particularly if supported by photographic records, cannot be gainsaid.

Complications of SIV

The following brief discussion may provide clues as to the type of individual in whom one should suspect the possibility of SIV.

Kartagener⁽¹⁾ described a clinical triad since known as the Kartagener syndrome: SIV, sinusitis, and bronchiectasis. Adams

1. Kartagener, M.: Zur Pathogenese der Bronchiektasien; Bronchiektasien bei Situs viscerum inversus, Beitr. z. Klin. d. Tuberk. 88:489-501, 1933.

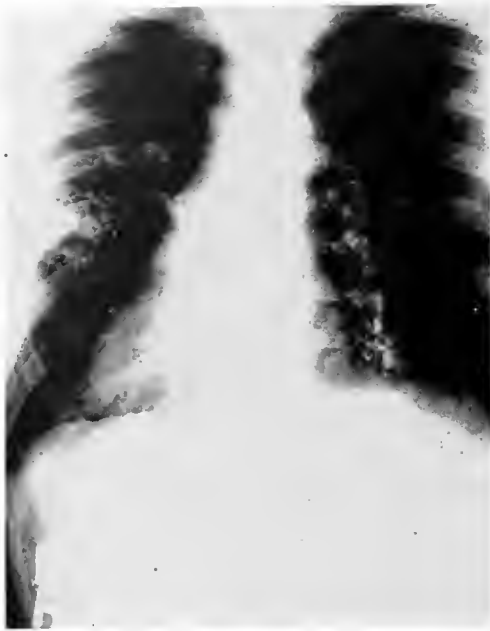


Fig. 3. (Case VIII) Kartagener syndrome. The ectatic bronchi are partially filled with lipiodol. The three lobed lung is here on the left.

and Churchill²⁾ reviewed the cases of bronchiectasis at the Massachusetts General Hospital and found the incidence of the disease higher in persons with SIV than in persons with situs solitus. In the author's collection of more than a dozen cases of SIV (table 1) there is one proven example of this syndrome (case VIII). A possible explanation for the supposed greater incidence of bronchiectasis in SIV is that an embryological pulmonic malformation predisposing to bronchial ectasia accompanies the transposed disposition of the viscera more frequently than the untransposed.

The causes of death in several hundred reported cases reviewed by the author are not confined to any system, organ, or tissue, and vary as widely as in the general population. A similar survey of the complaints bringing such patients to their physician (table 1) fails to demonstrate any peculiar susceptibility to disease. However, the condition is accompanied frequently by additional congenital anatomical abnormalities, such as congenital heart disease, cryptorchidism,

splenic and renal anomalies, and malformations of ectodermal derivatives.

If it be true that 70 per cent of vertex deliveries are LOA for anatomical reasons (the fetal occiput being in the left anterior quadrant of the maternal pelvis because the uterus undergoes torsion toward the right, owing to the presence of the sigmoid colon in the mother's left side), one should expect predominance of ROA deliveries in women with SIV. Thus, on examination of a pregnant woman with SIV, sinistrotorsion of the uterus should be anticipated.

Military Importance

Most of the surgical emergencies of civilian life, and in addition emergencies and operative conditions peculiar to military surgery, may confront the medical officers of the armed forces. There may be no time for preliminary physical examinations merely for the sake of determining gross anatomical peculiarities. Nevertheless, "while transposition of the viscera may have no prejudicial effect upon the life and health of the individual it may prove an awkward complication in surgical procedures. It is easy, for instance, to understand how the success of a colotomy (for intestinal obstruction) might be imperilled by its non-recognition by the operator. In the performance of an esophagotomy, of paracentesis thoracis, and of operations on the liver, gall-bladder, stomach, pylorus, and spleen, the presence of situs inversus would necessitate changes in the mode of procedure."³⁾ Consequently men with SIV should be discovered by physicians examining them for military service; they should be informed of their condition, and should receive some distinguishing mark, so that if they are rendered incapable of communicating their condition to a surgeon, their visceral situs may be instantly recognized in time of peril.

The importance of the above statement is emphasized by the report of difficulties encountered at operation by surgeons in civilian practice who have failed to discover the visceral transposition. A number of cholecystic and appendiceal operations have been reported in which a wrong-sided incision was made before the unusual position of the affected organ was diagnosed. If such mistakes have occurred in normal times without the pressure of accumulating casualties demand-

2. Adams, R. and Churchill, E. D.: Situs Inversus, Sinusitis, Bronchiectasis: Report of 5 Cases Including Frequency Statistics. *J. Thoracic Surg.* 7:206-217 (Dec.) 1937.

3. Ballantyne, J. W.: *Manual of Antenatal Pathology and Hygiene*, New York, William Wood & Co. 1905, xix and 679 pages.

TABLE 1

Case No.	Age	Sex	Race	Complaint	Proof of SIV	Complication	Handedness
I	27	m	Scotch-Canadian	pneumonia	x-ray & EKG		right
II	37	f	Italian-Canadian	rheumatic fever	x-ray & EKG		right
IV	10	f	Scotch-Canadian	sinusitis	x-ray & EKG		left
(Dr. J. G. Monroe, Montreal)							
VII	29	m	Italian-Canadian	rheumatic fever	x-ray & EKG		right
(Dr. H. N. Segall, Montreal)							
VIII	29	m	Swedish-Canadian	suspected tuberculosis	x-ray & EKG	sinusitis and bronchiectasis	right
XI	41	f	American	appendicitis	x-ray	subacute bacterial endocarditis	right
(Dr. J. P. Rousseau, Winston-Salem)							
XII	43	f	American	abdominal tumor	x-ray & EKG	congestive failure	right
(Dr. C. L. Haywood, Jr., Elkin)							
XIII	6	f	American	tonsillitis	x-ray		right
(Dr. C. L. Haywood, Jr., Elkin)							
XV	44	m	American	tuberculosis	x-ray		right
(Dr. P. A. Yoder, Winston-Salem)							
XVI	26	f	American	suspected tuberculosis	x-ray		right
(Dr. P. A. Yoder, Winston-Salem)							

ing emergency treatment, how much more likely it is that the mistakes will occur in military surgery during warfare!

It cannot be argued that the likelihood of encountering a person with SIV is so remote that this discussion has no real bearing on the present situation. Actually the frequency of SIV has not been satisfactorily established. Note the inconsistencies in the following figures:

1889 Gruenfeld ⁽⁴⁾	1:10,000 army recruits
1906 McCrae ⁽⁵⁾	1: 2,000 autopsies
1922 Sherk ⁽⁶⁾	1:34,700 Mayo Clinic patients
1925 LeWald ⁽⁷⁾	1:35,000 recruits (physicals)
idem	1: 5,000 recruits (x-rays)
1926 Cleveland ⁽⁸⁾	1:10,000 anatomy dissections
1928 Mandelstam and Reinberg ⁽⁹⁾	1: 1,230
1930 Roesler ⁽¹⁰⁾	1: 7,467

The present author collected a series of 10 cases from a city of 800,000 during the course of three years, and, thanks to the active cooperation of colleagues in North Carolina (with a population of about four million), has added another ten cases in

three months. It seems inconceivable that such a record would be possible if the condition were as rare as Sherk has estimated. On the other hand, if McCrae's calculation (1:2000) be correct, SIV is a congenital anomaly of distinct military importance.

Conclusion

The mirror-image disposition of the viscera, known as situs inversus viscerum, although not a common finding in routine physical examinations, is not as rare as it is ordinarily believed to be. Because its non-recognition in time of surgical emergency would imperil the life of the affected persons, it is a condition which should be correctly diagnosed and labelled by physicians, especially those entrusted with the examination of candidates for the armed forces.

Editor's Note:

Dr. Bauer has expressed his willingness to consult with any North Carolina physician who has a case proven or suspected of being SIV, and he would welcome the opportunity of studying additional cases of this condition from the hereditary viewpoint. Proper recognition will be given those who permit him to add their cases to his series.

The discovery of a primary infection in a child should not condemn it to a life of chronic invalidism, but should lead to the examination of its contacts with the expectation of the discovery of a source of infection, the successful handling of which will protect the child from any consequences of its infection, and possibly save the life and health of many other persons. G. A. M. Hall, M.D., British Jour. of Tuberc., July-Oct., 1941.

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THE USE OF SLOWLY ABSORBABLE MORPHINE IN THE TREATMENT OF ADDICTION

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GREENSBORO

Opium has been known and some of its important properties have been recognized since earliest antiquity. It is one of the few drugs which combine a highly necessary therapeutic effect with a vicious tendency to addiction. The high therapeutic effect makes opium and its alkaloids of great value to the profession. The vicious tendency to habit formation has been responsible for its misuse by the multitudes of unfortunates who hold this drug between themselves and reality.

The treatment of morphinism or opium addiction is divided into two parts. First, there is the withdrawal of the drug from the victim. Second, there is the prolonged period of rehabilitation or convalescence to make the patient fit to enter society again. Both of these phases are very important. If either is not carried out carefully, the treatment is sure to fail.

This paper deals with the first, or withdrawal part of the treatment. A new combination of morphine acetate in a glycerogelatinous base has been used with considerable success. The preparation is slowly absorbable and its effect is prolonged over a period of from fifteen to twenty hours. It does away with the "lift" that the addicts look forward to, and eliminates the period of "let down" that they all fear four to five hours after injection. The number of needle punctures is reduced considerably, and the so-called "needle habit" is partially done away with in this manner. The use of such a preparation is based on the same principle as that of protamine zinc insulin in the treatment of diabetes. A patient on gradual morphine reduction treatment receives a more constantly diminishing amount of morphine than is the case when regular morphine sulfate is used.

This slowly absorbable morphine has worked equally as efficiently when used in conjunction with a modified Lambert treat-

ment. When it is used in this manner, patients may be taken off morphine sulfate with comparatively little suffering in four to five days' time.

The drug has been used for the past year and a half at Glenwood Park Sanitarium on fifty-two addicts. The average time that the effects of the drug could be felt by the patients was sixteen hours, with a variation of from ten to twenty hours. There have been no toxic effects other than that of morphine itself. No abscesses have been caused by its injection.

Slowly absorbable morphine has been used for other conditions in which prolonged narcosis is desired, with favorable results; but as yet sufficient data have not been accumulated.

At this particular time it is believed that such a preparation could be used to advantage by the Army. A soldier wounded at the front might be spared the shocking and possibly fatal effects of the ride back to a base hospital by the prolonged action of this slowly absorbed morphine. For soldiers who have been subjected to surgery, the use of this preparation would afford prolonged comfort that might otherwise be impossible during an emergency.

Morphine acetate in glycerogelatinous base is a gel at ordinary temperatures. It must be warmed before being used. It may be injected with a twenty-four gauge needle. The dose for non-addicts is twice the regular dose of morphine. In addicts the dose, of course, depends on the individual. This preparation is as yet not on the market.

Improvement in Diabetes.—Failure to recognize that diabetes can improve and grow milder is a definite hazard. It is almost as serious as failure to recognize that it can grow worse. In one case the failure may lead to an insulin reaction, and in the other to diabetic coma. There are so many mild diabetic patients today who do improve, and such a considerable percentage who by living faithful dietetic lives and taking proper exercise could give up their insulin safely, that it is a shame not to recognize their improvement and enable them to do so.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:591 (April 3) 1941.

The Danger of Neglecting the Toes in Diabetic Patients.—I do not dare to look up how much of the free-bed money for diabetic patients in the New England Deaconess Hospital is spent on neglected toes, but I venture to say that the charity money devoted to the toes of elderly diabetic patients is five times that expended on diabetic patients in their teens.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:592 (April 3) 1941.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

DUODENAL DIVERTICULA

DAVID CAYER, M. D.

and

GEORGE BAYLIN, M. D.

Diverticula of the duodenum, although not rare, cannot be diagnosed without the help of the x-ray. The first recorded roentgen diagnosis was made by Case⁽¹⁾ in 1913. Since that time, there has developed a voluminous literature on the subject. The significance of duodenal diverticula has been the source of considerable difference of opinion.

Incidence

It is difficult to estimate the frequency of duodenal diverticula. The incidence varies with the age of the group studied. Grant⁽²⁾, working with dissecting room specimens, and carefully preparing the gut with paraffin, found that diverticula occurred in 1 out of 25 persons 52 years of age and under, and 1 out of 6 persons over 52 years of age. Various x-ray surveys of patients of all ages reveal duodenal diverticula in an average of 2.5 per cent. When it is realized that even at autopsy diverticula are sometimes found only after exacting search, this apparently wide discrepancy is more easily understood.

Symptoms

The history may simulate that of ulcer, carcinoma, colitis, or disease of the biliary tract or pancreatic tract. The most frequent complaints are flatulence, distention, epigastric pain and heart burn following meals. These vague complaints may be due to the retention of food in a diverticulum whose deficient musculature cannot empty it. Pain may be a sign of inflammation within the pouch. More serious complications may occur. Acute perforations have been described by several authors, and are usually diagnosed as perforating ulcer, acute appendicitis, or acute cholecystitis. Lucinian⁽³⁾ described an instance of perforation into the pancreas which was diagnosed pre-operatively by x-ray, with subsequent recovery. Ob-

struction may occur. Finney⁽⁴⁾ believes that the formation of scar tissue in the bowel, through repeated infections extending from the diverticulum into the wall of the intestine, is the cause of obstructions. Primary carcinoma in a diverticulum of the duodenum has been reported.

Pathology

Most duodenal diverticula are mucosal sacs which have herniated through the circular and longitudinal musculature and are devoid of a true muscle coat; less frequently they involve all the layers of the gut wall. The first group has been classified by Odgers⁽⁵⁾ as the primary type and the greatest number of these are found in the second, third, and fourth portions of the duodenum, located almost exclusively within the duodenal loop along the mesenteric border. They connect with the bowel by a narrow neck. Spriggs and Marxer⁽⁶⁾ and Weintraub and Tuggle⁽⁷⁾ report the occasional finding of a diverticulum on the concave border of the duodenum. The other group, or the secondary type, almost invariably occurs in the first portion of the duodenum and is associated with duodenal ulcers or periduodenal adhesions. Wierig⁽⁸⁾ reports instances of this type in the third portion which are due to gall-bladder adhesions producing traction on the bowel wall.

While the origin of the secondary group is readily understood, there is considerable difference of opinion regarding the etiology of primary diverticula. Intraduodenal pressure and weak areas in the bowel wall, particularly at the points of entrance and exit of the blood vessels, have been described as factors. Linsmayer⁽⁹⁾ and Horton and Mueller⁽¹⁰⁾, having found pancreatic tissue in the bowel wall of diverticula, maintain that this aberrant tissue produces a weakness which eventually permits herniation to occur. It has been suggested that an atrophic pancreas may produce a herniation by trac-

From the Departments of Medicine and Roentgenology, Duke University School of Medicine, Durham, North Carolina.

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tion. Keith⁽¹¹⁾ suggested that traction by the common duct may pull out the duodenal wall. Recent writers regard primary diverticula as congenital in origin. Nagel⁽¹²⁾ states that, regardless of when or why diverticula appear, they always occur at congenital weak points in the bowel. In support of this theory are the facts that diverticula frequently are multiple and that they often co-exist with abnormalities elsewhere; that they are occasionally found in infants; and that, as Keibel and Mall⁽¹³⁾ point out, the duodenal epithelium exhibits extraordinary activity, proliferating so rapidly that weak areas are produced in the wall of the gut.

Diagnosis

The diagnosis can be established only by the use of the opaque meal. The diverticulum is recognized as a small or large barium-filled pocket connected with the lumen of the gut by a short, narrow neck. Rarely is there any definite mucosal pattern within the diverticulum itself, and there is usually an abrupt change from the normal duodenal pattern to a linear pattern at the neck of the pouch. This feature, indeed, is helpful in distinguishing the lesion from a benign or malignant ulceration. It must be emphasized that the recognition of diverticula depends on the care with which the examination is conducted, and the frequency with which the radiologist discovers them is an indication of his thoroughness. A diverticulum which fills on one occasion may fail to fill at a subsequent examination, but frequent examinations will eventually again demonstrate its presence. The presence of diverticula can not be assumed to explain a patient's symptoms until the size, shape, position and mobility of the pouch, and the relation of the shadow to tenderness on palpation have been noted. One must demonstrate, furthermore, definite radiographic changes in the duodenum: stasis in the loop, tenderness over the pouch, or an actual defect within the diverticulum. In several patients where these conditions were met further examination revealed other conditions which explained the symptoms. Among these were early cardiac failure, pernicious anemia and diabetes. In these cases specific treatment was followed

by improvement. In the 40 patients we have studied, gallbladder series were negative and gastrointestinal series failed to reveal any other intestinal disease, but in only 4 (10 per cent) could the diverticula which had been demonstrated be considered as the prime cause of symptoms.

Treatment

The absence of symptoms, or the finding of a duodenal diverticulum associated with an atypical clinical picture, frequently is confusing, and the treatment of patients in whom diverticula have been found may present a difficult problem. The frequency of the occurrence of diverticula without symptoms must be borne in mind, as well as possible complications. In an attempt to evaluate the significance of duodenal diverticula and to outline an effective form of therapy, we have reviewed the clinical courses of 40 patients in whom diverticula were found. Of these, 16 were males, and 24 were females. The average age was 51 years; the youngest patient was 28, the oldest 72. The most frequent symptoms were pain, usually in the right upper quadrant; gaseous distention; anorexia; nausea and vomiting. Nine patients noted the onset of symptoms one-half hour after meals; 5 stated that symptoms were relieved by food; and the others noted no relationship to food. Diagnosis before x-ray examination was peptic ulcer in 7 cases, chronic cholecystitis in 6, gastric neurosis in 5 and carcinoma of the stomach in 3.

Where symptoms are mild and the outpouchings small, medical treatment consisting of rest and a bland diet, with the avoidance of large meals—the usual ulcer regimen—is of value. Massage over the site of the diverticulum is said to be of use, but this is doubtful. Surgery is indicated when the diverticulum is large and produces persistent symptoms, or when any of the aforementioned complications occur. Lahey⁽¹⁴⁾, while stating that surgery is usually necessary for accumulations or ulcerations within the sacs, warns that diverticula arising from the posterior wall and burrowing into the vascular structures and the head of the pancreas “are dissected with great difficulty, and often at unjustifiable hazard.” Moreover, the fact that we are often dealing with individuals in the sixth decade calls for an adequate trial of a medical regimen.

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Summary

The exact diagnosis of duodenal diverticula can be made only by x-ray studies. The evaluation of x-ray findings must include careful fluoroscopic study, as well as a thorough medical survey, to exclude the metabolic and organic disorders so frequently present at the ages when diverticula are most common. In the absence of complications treatment is purely medical.

ESSENTIAL DRUGS FOR THE PHYSICIAN'S BAG

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The science of medicine has become so complex that we are prone to forget that the greatest demands on the doctor's time are made by patients with relatively minor complaints. A recent survey published in the *JOURNAL* of this Society showed that 85 per cent of patients can be cared for with the contents of an ordinary professional bag⁽¹⁾. This statement presupposed that common diagnostic instruments (thermometer, blood pressure manometer, stethoscope, ophthalmoscope, otoscope, tongue depressors, reflex hammer, flashlight, and rubber gloves) were carried, and that a few simple diagnostic aids (glass slides, blood counting pipette and diluting fluid, Loeffler's culture media, and Wassermann tubes) and simple therapeutic aids (2 cc. hypodermic syringe, 10 or 20 cc. syringe for intravenous injections, needles, tourniquet, 13 or 14-gauge bleeding needle, catheter, stomach tube, cotton, and suture material on needles) were available.

A few drugs are necessary for specific uses. These include tincture of iodine, metaphen, or merthiolate for antisepsis of small surface wounds, or, diluted with water, for use on mucous membranes; 70 per cent alcohol; mercuric chloride tablets; 1 per cent silver nitrate solution for prophylaxis of ophthalmia neonatorum; 1 per cent solution of homatropine hydrobromide for dilatation of the pupil; and 1 per cent solution of procaine with .001 per cent epinephrine for local anesthesia.

A relatively small number of drugs, properly used, will suffice to treat adequately most minor symptoms and to meet most medical emergencies. Few places in North Carolina are more than an hour or so by car from a pharmacist, and such a delay will rarely endanger life; hence, we need not consider as necessary for the physician's bag the multiplicity of drugs on the pharmacist's shelves or in his refrigerator.

The physician must be prepared to administer emergency measures at once. Some emergencies are best cared for in a hospital, but temporary measures can be instituted wherever the patient is first seen. In acute cardiac failure, as in other medical emergencies, the most valuable drug is morphine. Used adequately it will allay dyspnea and pain, but more important still, will dispel anxiety and give rest. This may be conveniently carried as a 1 per cent solution in a rubber-diaphragm-stoppered bottle, as well as in the familiar tablets. Salyrgan with theophylline given intravenously to stimulate diuresis will contribute to the comfort of those in chronic cardiac failure. Theophylline with ethylenediamine (aminophylline) slowly given intravenously may relieve paroxysmal nocturnal dyspnea through improvement of the coronary circulation and relaxation of the bronchi. Nitroglycerine under the tongue or under the skin will relieve the distress of angina and may help to relieve the spasm accompanying occlusion of a coronary artery. The margin of safety is very wide and the dose may be repeated frequently over a long period. Digitalis rarely has to be given so rapidly that intravenous injection is necessary. The quantity required for intravenous injection—10 to 15 cat units—is large and is unnecessarily expensive. In acute cardiac failure with pulmonary edema, the withdrawal of 500 to 600 cc. of blood is more helpful than any drug. If rapid digitalization is still imperative and it is known that the patient has had no digitalis in the preceding two weeks, intravenously administered purified glucosides of *Strophanthus kombe* (strophanthin-K) would be the drug of choice. Standardization is not as accurate as we would desire, but this drug may prove life-saving.

In cases of shock the single most helpful procedure is a transfusion of whole blood. This is impractical as an emergency measure in the home, but it is now possible to obtain

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From the Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

1. Editorial, North Carolina M. J., 1:320 (June) 1940.

the next best substitute—human plasma—prepared by the lyophile process, stable at ordinary temperatures, and requiring only the addition of sterile water. This product is expensive at present, but certainly by the close of the war will be within the reach of the average patient. Fluid in any form, such as glucose in saline or Ringer's solution, will do. This is cheap and is readily available in vacuum packed disposable glass containers which can be carried in the car for weeks without deterioration and can be given in the home in a matter of minutes. Evidence of the value of the highly advertised circulatory stimulants in shock has not been convincing. Epinephrine is contraindicated, since its action—contraction of the terminal arterioles—will further impair circulation in the periphery and will not correct the true fault, loss of circulating blood volume. The heart has already been adequately stimulated by the failure of the circulation.

For the relief of the respiratory distress of allergic bronchial asthma use epinephrine carried as the aqueous solution in a rubber-diaphragm-stoppered bottle for rapid action, and suspended in oil for prolonged relief. When the efficacy of this drug has been temporarily exhausted, aminophylline intravenously may be effective. Morphine should never be used, since it depresses respiration. For stimulation of the respiratory center which has been previously depressed by drugs such as morphine or the barbiturates, coramine or metrazol intravenously or subcutaneously or caffeine with sodium benzoate by the latter route may be helpful. These drugs in ordinary dosage are without effect on a medulla not depressed by drugs.

Convulsions or manias due to psychic disturbances are usually controllable by the intravenous injection of a soluble barbiturate such as sodium amytal in doses of 0.25 to 0.50 Gm. (4 to 7½ grains). For milder sedation phenobarbital by mouth is a cheap and satisfactory preparation; this should always be given before a local anesthetic is injected, to prevent overstimulation of the medulla. Paraldehyde is an effective though unpleasant drug which may be given intravenously, slowly, in 3 to 5 cc. doses, as well as by mouth or rectum.

The relief of pain or colic is one of the most frequent problems the physician encounters. For mild pain aspirin is the safest and cheapest analgesic. The hypnotics, such

as the barbiturates, offer no relief of pain, but may make pain-relieving drugs more effective. Codeine has little power to induce rest, but allays pain. The maximum effect is obtained by the use of 64 mg. (1 grain), which is roughly equivalent to 10 mg. (1/6 grain) of morphine; further increase in dose is wasted. Morphine is most satisfactory for the relief of pain, and the more expensive derivatives and synthetics have few, if any, additional virtues. For the severe pain of embolism or coronary thrombosis it may be necessary to give 32 mg. (½ grain) of morphine, but great care must be exercised to prevent late respiratory depression. Morphine contracts most smooth muscle, and though it may block the appreciation of pain by the brain, it may aggravate the local cause of pain. The pressure in the biliary tract behind a stone will be raised by morphine; relieve this by nitroglycerine simultaneously given. The spasm around a ureteral calculus will be increased, but the addition of atropine will relax this and aid in the passage of the stone. A much neglected drug which is almost specific for relaxation of smooth muscle is papaverine. This has none of the depressant characteristics of other opium derivatives, and although usually used in doses comparable to that of codeine, may be given in quantities as great as 120 mg. (2 grains) intravenously. Occasionally scopolamine (hyoscine) is effective as a hypnotic when other drugs are not.

In obstetrical emergencies sedation and replacement of blood loss follow the principles outlined. Some obstetricians prefer magnesium sulfate as a parenterally administered anticonvulsant. Of the drugs with strong oxytocic action the injectable salt of the alkaloid ergonovine (ergotrate-H) is probably the best for routine use, although posterior pituitary extract is more rapid in action in postpartum hemorrhage. Posterior pituitary extract may also be used, after insertion of a rectal tube, to overcome the distention of paralytic ileus after delivery or operation or during acute infections, although prostigmine methylsulfate, 0.5 mg. (1 cc. 1:2000 solution) subcutaneously, causes less severe cramps and maintains better tone.

In surgical emergencies mechanical measures—tourniquets, sutures, duodenal intubation, and splints (which can now be carried easily in the car as prepared dry bandages)

—are as useful as drugs. Fluids for parenteral use are invaluable. The routine use of powdered sulfonamide compounds locally in wounds is not justified in the present state of our knowledge. Fresh burns may be treated locally with a freshly prepared 10 per cent solution of tannic acid, sprayed with a mixed aqueous solution of 2 per cent gentian violet, 1 per cent brilliant green and 0.1 per cent acriflavine, or covered with 50 per cent codliver oil ointment in white petrolatum. Recent experiments with powdered sulfonamides suspended in a disappearing cream base and with a spray of 3 per cent sulfadiazine in 8 per cent triethanolamine may prove these methods to be better.

Potassium permanganate crystals in tablets of 0.23 Gm. ($3\frac{1}{2}$ grains) when dissolved in one quart of water make a 1:4000 solution which is useful in lavage of the stomach in poisoning due to ingested organic compounds. Eggs and milk are available in the home for the treatment of other poisons. Permanganate crystals may be applied locally to snake bite. In the treatment of medullary depression due to poisoning by hypnotics, strychnine may be used—and this is its only justifiable use—, although picrotoxin is a better agent. The latter should be used under close supervision, preferably in a hospital. Calcium chloride or gluconate, 10 to 20 cc., in 10 per cent solution for intravenous use is reported to stop the pain of black widow spider bites and may relieve the colic of biliary or renal stone.

Diabetic coma should be treated in a hospital; hence, insulin is rarely needed in the home. It should not be given without testing the urine, and this would require the use of Benedict's solution or of the newer powdered reagents such as galatest or the clinitest tablets.

In summarizing, there are nine essential drugs which the physician should always have in his bag and with which he can adequately handle at least 85 per cent of his calls, including emergencies. These are: morphine, atropine, nitroglycerine, epinephrine, aspirin, phenobarbital, sodium amytal, posterior pituitary extract, and an antiseptic solution. The most helpful agent he can carry in addition to these drugs is fluid for intravenous administration, preferably 5 per cent glucose solution in saline. The addition of other drugs would depend on the type of practice and the availability of a source of supply.

THE INJECTION TREATMENT OF CERTAIN CONDITIONS IN GENERAL PRACTICE

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The injection treatment or sclerosing therapy of certain conditions in general practice is scientific, inexpensive, and safe; and above all, it is liked by the patient. Any good general practitioner can treat many conditions in his practice by this method of therapy, which is carried out in the physician's office. There is no necessity for hospitalization and no hospital bills to pay. The patient is saved the fear of the surgeon's knife and does not lose time from work.

Many good medical men do not believe in treating certain conditions by the injection or sclerosing method. Their objections to this method of treatment are probably due to the fact that inexperienced and unethical practitioners and quacks have employed it unwisely in many conditions.

The injection treatment of internal hemorrhoids was originated by Dr. Mitchell in 1871. He did not publish his formula or technique, but instead sold the secret to anyone who had money enough to pay for it. Some were not even medical men. Naturally disastrous results followed and the method was not adopted by the medical profession.

The treatment of varicose veins by injection goes back as far as 1851. Pravaz, who invented the hypodermic syringe, was the first man to inject varicose veins. Lack of knowledge and the use of too strong sclerosing solutions caused many bad results, and this method was not accepted by the medical profession in general until a few years ago. All of these unfortunate incidents have caused many medical men to be skeptical of this therapy. I believe that most physicians today will agree that the injection treatment of varicose veins is simpler than the previous surgical resection, but many of these same men still do not employ sclerosing therapy for hydrocele, internal hemorrhoids, ganglion, and other conditions. Many such cases can be treated by this method with as good results as could be obtained by surgery, if not better. Today many leading clinics are

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using the injection method with excellent results. The cases should be selected, of course, and when surgery is indicated it should certainly be advised.

The procedures followed in the injection treatment are simple. Any good general practitioner can readily acquire the technique. A short postgraduate course is advisable. Time does not permit me to discuss all of the conditions suitable for this type of therapy, but I will discuss briefly some of the common conditions we see in our practice.

Varicose Veins

The sclerosing therapy of varicose veins is well recognized by the medical profession. Various techniques are employed. It is safer to test the deep circulation, but rarely will you find a patient who does not have enough deep circulation to render injection treatment of the superficial veins safe. Of course, if there is an acute phlebitis of either the deep or the superficial veins, no injection should be made until this condition is cleared up. If the patient gives a history of an attack of thrombophlebitis it is especially wise to test the circulation before carrying out the treatment. In most cases, however, the superficial veins can be injected, using a small amount of fluid at each injection, with no untoward results. Systemic diseases such as diabetes and hyperthyroidism should be controlled before injections are made. Large abdominal tumors should be removed before treating the veins, in order to relieve the pressure on the veins. Varicose ulcer of the leg is no contraindication to injection treatment. There is some controversy as to the advisability of injecting veins during pregnancy. If the veins are causing much discomfort it is probably advisable to inject them any time during the first seven months, provided no sclerosing solution containing quinine is used.

Many solutions may be used in the treatment of varicose veins, the most popular ones being sodium morrhuate and quinine-urethane. The patient may lie down, sit down, or stand up while the solution is injected into the veins. No elaborate equipment is necessary, and some men do not consider it necessary to use a tourniquet. In some cases it is better to ligate the great saphenous vein before beginning injection therapy. Usually only one place is injected at a time, and injections are given at one to two week intervals.

I usually have the patient stand or sit, and I apply a tourniquet above the site where the injection is to be made. A 10 cc. syringe with a 23 gauge needle is used. The skin is sterilized with any good antiseptic and the needle is inserted into the vein. The plunger is withdrawn, and if blood comes back into the syringe I know that the needle is in the vein. Then the solution is slowly injected. I use about 5 to 10 cc. of 5 per cent sodium morrhuate solution or 1 to 3 cc. of quinine urethane (Parke-Davis). The amount depends on the size of the vein. Just as soon as the needle is withdrawn a dressing of gauze is applied over the needle puncture and adhesive is tightly pulled over the gauze. This dressing is left on for an hour or so to prevent leakage of fluid from the vein. Some physicians bandage the entire leg with elastic bandage. I do not think this makes any difference in the results. The patient is told to continue with his work.

The small hair-like veins or "spider bursts", which usually give no symptoms but which may be treated for cosmetic reasons, are injected by using a very fine needle (26 or 27 gauge). Since it is easy to get the needle out of these veins into the subcutaneous tissue, it is better to use 5 per cent sodium morrhuate solution. This will not cause a slough, whereas quinine urethane injected into the subcutaneous tissue almost always results in a slough. These small veins require only a very small amount of fluid.

Hydrocele

The acute types of hydrocele, with inflammation and edema of the tissue, should not be treated by this method. Many of the chronic hydroceles, especially the chronic idiopathic types, can be successfully treated by the injection method, and the patient can continue with his work. There are several sclerosing solutions that may be used, the most popular ones being 5 per cent sodium morrhuate solution, quinine-urethane solution (Parke-Davis) and 5 per cent phenol in equal parts of glycerine and water¹. The fluid is aspirated from the hydrocele in the usual aseptic manner, using a large size needle—about 18 gauge—after first making a wheal with novocain to desensitize the area. Then another syringe containing the sclerosing solution is attached to the needle

1. Goldbacher, Lawrence: *The Injection Treatment of Hernia and Hydrocele*, Philadelphia, L. Aubrock & Co., 1938.

while it is still in the sac and this solution is injected directly into the hydrocele. The amount of solution depends upon the kind used and the size of the hydrocele. With 5 per cent sodium morrhuate solution usually 5 to 10 cc. are injected; with quinine urethane only 1 to 3 cc. are necessary. On the average one should inject about one tenth the amount of the fluid aspirated from the hydrocele if phenol in equal parts of glycerine and water are used.

There is practically no pain during this procedure, and after some support, such as a suspensory bandage, is applied to the scrotum, the patient is permitted to go home. For a few days after the treatment one can expect some tenderness and slight swelling of the scrotum, which soon subsides. Occasionally aspirin or codeine may be necessary for the first day or so, but often no analgesics are required and the patient remains ambulatory. He should be told what to expect. Sometimes more fluid will appear during this first phase of the treatment. This should be aspirated. In around three or four weeks another injection may be made if the fluid continues to collect. Many times one injection brings about a cure. Rarely is it necessary to give more than two or three. If this method of therapy fails, surgery can still be employed.

Occasionally a patient will have a reaction from the sodium morrhuate solution or the quinine preparation. A history of quinine sensitiveness should lead the physician to use some other solution, and the patient's sensitivity to the morrhuate solution can be tested by injecting a small amount in a vein in the leg a few days before treating the hydrocele. No sensitivity to the phenol preparation has ever been heard of.

Varicocele

A varicocele usually causes no symptoms and needs no treatment. In some cases where the varicocele is very large, however, or in neurotic patients the condition may cause worry and may be treated by the sclerosing method. This is done in the same manner that varicose veins are treated. About 1 to 3 cc. of either 5 per cent sodium morrhuate or quinine urethane is injected into the veins. Usually one injection is sufficient. A suspensory bandage is advised for several weeks.

Internal Hemorrhoids

A good many of our patients have "piles that come down." We should not get internal hemorrhoids which are prolapsed to the outside confused with external hemorrhoids. Internal hemorrhoids are covered with mucous membrane; external piles are covered with skin. The treatment of internal hemorrhoids depends on the size and degree of prolapse, but many cases can be cured by injection. Some surgeons say that all cases should have surgery. The injection treatment is appropriate for many cases; it can be done by the general practitioner, and is as scientific as the treatment of varicose veins elsewhere. Recurrences occur once in a while; but injections can be repeated, and if necessary surgery can be done later. Recurrences following surgery also occur. The injection treatment is practically painless and there is almost no danger if it is done right.

Among the most popular solutions used is 5 per cent phenol in almond oil or compressed cotton-seed oil. Quinine-and-urea hydrochloride has its advocates. These solutions are not injected into the veins, but outside of the veins in the submucous tissue of the hemorrhoidal mass. Almost any kind of anoscope can be used. With the patient in the left lateral Sims' position and with proper light the hemorrhoids are brought into view with the anoscope. The needle is inserted into the hemorrhoidal area under the mucous membrane, and before injection is started the plunger is pulled back. If any blood is drawn into the syringe the needle must be withdrawn and reinserted. When the injection is started the hemorrhoidal mass will immediately bulge. There should be no blanching of the overlying mucous membrane; if there is, the injection must be stopped, for this means that we are injecting into the mucous membrane, and a slough may result. With phenolized oil usually 3 to 8 cc. of the solution is injected into one hemorrhoidal mass, depending upon the size. With quinine-and-urea hydrochloride usually 1 or 2 cc. is sufficient. It is better to inject one hemorrhoid at a time, at weekly intervals, until the treatment is completed. Four or five injections are necessary, depending upon the number of hemorrhoids present. No other local treatment is necessary and the patient can continue with his work.

Pruritis Ani

Pruritis ani is a tormenting condition. In many cases the cause cannot be determined. Total disability over a long period is not uncommon. Patients sleep fitfully, awake scratching, and may lose weight from worry and loss of sleep. Diabetes should be ruled out, and skin diseases such as fungus infections should be treated with suitable germicides. The many cases in which no cause can be found we have to treat empirically. Excellent results from injecting alcohol under the skin around the anus are being reported. Buie² reports good success with this treatment. Its disadvantages are that the patients have to be hospitalized for a week or so, and the treatment is painful. X-ray has been used with success by some. Others inject with distilled water and many other liquids. Injections with an anesthetic oil, such as Morgan's solution³, afford relief in many cases. These are given with the patient either on a rectal table or in a lateral Sims' position, lying on the left side with the left arm at the back, the right leg flexed and the left leg partly flexed. Either a head light or an ordinary floor light is sufficient. The patient uses his right hand to pull up on the right buttock to help give good exposure. A 10 or 20 cc. syringe with a 20 gauge needle is used, and the needle is inserted at the outer border of the abnormal skin involved in the pruritis and is passed under the skin inward to within half an inch of the anus. No injection is made as the needle is being inserted. The injection of the oil begins as the needle is slowly withdrawn to the point of the insertion. The needle is not removed from the skin, but is again inserted in another direction, and more solution is injected in the same way. This is done until one side is injected in a fan like manner through only one needle puncture of the skin. Usually about 10 cc. is injected on one side; then the procedure is repeated on the other side of the anus. There is very little pain during this treatment and no local anesthetic is necessary. It is important not to inject the solution into the skin and not to inject too much solution in one place.

2. Buie, Louis A.: *Practical Proctology*, Philadelphia, W. B. Saunders Company, 1935.

3. Morgan's solution contains:

Novocain	1 Gm.
Butesin	6 Gm.
Benzyl alcohol	5 cc.
Almond oil q. s.	100 cc.

Abbott Laboratories make a similar solution, "Zylcain", in 5 cc. ampules.

Usually the patient will get instant relief from the itching and no repeat injections will be necessary; but if all the itching is not relieved within a week or ten days more solution may be injected into the areas where itching persists. Many patients get relief permanently from this treatment, but there may be a recurrence after several months or years. The treatment can then be repeated. This is an office procedure and the patient can continue with his daily work. Only occasionally is there a local reaction with swelling, and this may be cleared up by hot sitz baths and sulfanilamide by mouth for a few days.

Another treatment for pruritus ani that gives good results is the injection of 5 per cent phenol in equal parts of glycerine and water⁴. This solution is injected subcutaneously, the needle being inserted at the lateral edge of the external sphincter muscle on each side. The external sphincter can easily be located by the finger as a hard ridge around the anus. About 10 cc. of this solution is injected in a fan-like manner on both sides of the anus into the loose subcutaneous tissue. The patient should have no pain during the injection of the solution. If he does, the needle is inserted either too deeply or not deeply enough. When pain is felt the needle should be moved, allowing the solution to flow in easily. Calamine lotion is used locally and the patient is advised to keep the skin around the anus scrupulously clean. Cotton balls wet with some antiseptic solution such as 1-5000 potassium permanganate are good to use after each bowel movement. The patient is told that the itching will soon stop and that he must put on gloves at night if necessary to prevent scratching when he is asleep. A well-balanced diet, plenty of rest and sleep, and freedom from worry are important in getting a cure. Frequently a sedative is advised.

Ganglion

The skin over the ganglion is sterilized and a small wheal is produced with novocain. A large needle (18 gauge), attached to a 5 or 10 cc. syringe, is inserted into the cavity of the ganglion and the contents are aspirated. Then another syringe containing from 1 to 5 cc. of 5 per cent sodium morrhuate solution is attached to the needle and the

4. Goldbacher, Lawrence: *Rectal Diseases in Office Practice*, Philadelphia, L. Aubrook & Co., 1936.

fluid is injected into the cavity. The solution is withdrawn and reinjected into the sac, this procedure being repeated about four times or until the walls of the sac are thoroughly washed. A small amount, 1 to 2 cc., is left in the sac, and the needle is withdrawn. If the fluid is cloudy after washing the walls of the sac, some fresh fluid can be injected by attaching another syringe. Most cases require only one treatment. Occasionally two or three treatments may be necessary.

Conclusion

The injection treatment is an inexpensive scientific, and safe method of therapy if used in selected cases. The procedures are simple and the results pleasing.

BROMIDE THERAPY AND INTOXICATION

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Bromides are a valuable aid in the management of tension states, anxiety, and insomnia. They have been extensively used in the treatment of epilepsy, although during recent years they have been replaced to a large extent by phenobarbital and dilantin. Bromides tend to irritate the gastric mucosa, and should therefore be diluted before administration. A blood level of around 125 mg. per 100 cc. of blood is considered about the upper limit of safety. This varies widely, however, so that some patients can tolerate 300 mg. or more with few signs of intoxication, while others show evidence of poisoning on less than 100 mg. per 100 cc. Blood level determinations should be made occasionally, so that the level will not exceed a toxic concentration. Wuth⁽¹⁾ was largely responsible for awakening interest in bromide intoxication in this country, and his procedure, devised about thirty years ago, is the most convenient means of quantitative estimation of bromides in the blood.

The high incidence of bromide intoxication has been due in large measure to the unrestricted sale of sodium bromide and of various preparations containing bromides, such as Elixir of Five Bromides, Peacock's Bromides, and pain-killers such as BC Powders, Stanback, Goodies, Bromo-Quinine

Bromo-Seltzer and Bromidia. More than two hundred patent medicines contain bromides. In 1935 the American Association of Pharmacy stated that the number of prescriptions calling for bromides is exceeded only by those containing aspirin. Such prescriptions can be refilled, and this unfortunately leads to extensive self-medication. Bromide preparations are much used in the treatment of headaches, insomnia and symptoms incident to chronic alcoholism.

Solomon describes the pharmacological action of bromides as follows: "They depress the entire central nervous system with the exception of the medulla, depressing the psychic functions, the motor cortex and spinal cord, lowering its reflex excitability. The muscle tone is lowered throughout the entire body. Ordinary doses have no effect on the circulation, but larger doses depress the heart and vasoconstrictor center. They lessen arterial tension and lower body temperature, depress sexual appetite and power and cause pallor, acne on face and extremities, a coated tongue, disordered digestion, emaciation, somnolence, sluggish reflexes and defective coordination. They may be responsible for impairment of the mental faculties, with hallucinations and delusions, or cause melancholia or maniacal excitement."

Normally, there is very little bromide in the blood stream, the level varying between zero and 3 mg. per 100 cc. of blood⁽²⁾. Bromide is used in therapy because it depresses the nervous system.

A blood level above 150 mg. is termed by Wuth as the "toxic zone"; however, it is well known that some persons, otherwise healthy, seem to lack resistance and become delirious on a much lower concentration. A person using little or no salt will become intoxicated with greater ease. The older the patient, the greater is the danger of poisoning. A level of 300 mg. without symptoms is rare, regardless of age. According to Bernoulli, a replacement of over 40 per cent of the blood chlorides by bromides will prove fatal. Sharp states that bromides may be excreted in sweat, tears, mucus, urine, feces, semen and milk. The bromide in the tears probably causes conjunctivitis by irritation. Bromides are absorbed by the stomach and appear in the

1. Wuth, O.: Rational Bromide Treatment, J.A.M.A. 88: 2013-2017 (June 25) 1927.

2. Wikoff, H. L., Brunner, R. A., Allison, H. W.: The Normal Bromine Content of the Blood of Healthy Individuals, Am. J. Clin. Path. 10:234-237 (March) 1910.

urine within a few minutes. However, there may be no bromides in the urine even when a high level is present in the blood. Autopsy studies show that the heaviest concentration of bromides occurs in the cerebral cortex, lungs, and kidneys, being as high as .3 per cent to .5 per cent. Some workers⁽³⁾ believe that the meningeal permeability to bromides is increased in cases of meningitis, central nervous system syphilis, arteriosclerosis, chronic alcoholism and diabetes, and is decreased in schizophrenia and epilepsy. The bromide level in the cerebrospinal fluid seldom equals the blood level, and bromides appear somewhat later in the cerebrospinal fluid than in the blood⁽⁴⁾.

The clinical picture of bromide intoxication⁽⁵⁾ is essentially an organic reaction type; however, the symptoms vary, depending upon the personality make-up of the patient. The patient is usually in an enfeebled state. The breath has a sweetish, fetid odor; the tongue is coated with thick brown fur, speech is thick and slurred; and ataxia and incoordination are usually present. The pupils are usually dilated and sluggish to light, but they may be small, unequal, irregular and sluggish to light. They react to accommodation. Such cases closely resemble general paresis. There is frequently tachycardia (120 to 140), and a fever of 100 to 103 F. The fever is usually due to dehydration, which is so often present. Reflexes are frequently hyperactive, although they may be sluggish or absent in severe cases. Loss of sphincter control may occur. Occasionally, a bromoderma⁽⁶⁾ is present, and any sudden onset of acneform lesions should at once cause one to suspect bromoderma. This is especially true if there are no comedones. Apparently there is no direct relation between the presence of skin lesions and the blood bromide level, and there is no critical point at which the lesions will disappear. The one essential finding in a bromide delirium is disorientation. Memory impairment, dullness, fear, auditory and visual hallucina-

tions, and ideas of persecution may or may not be included in the syndrome. Schilder⁽⁷⁾ reports that in many cases of bromide intoxication, the patients experience visual hallucinations "at a distance".

I have reviewed all cases admitted to the State Hospital at Morganton, North Carolina, over a period of eighteen months, with special reference to bromidism. Between January 1, 1940, and June 30, 1941, a total of 1042 patients were admitted to the Hospital. Of this number 286, or 27.5 per cent had blood bromide levels above 50 mg. per 100 cc. on entry. Slightly over half of these patients were women. In 46 patients the blood bromides were above the toxic level of 150 mg. per 100 cc. This number represents 4.4 per cent of the total admissions during that period. In the 286 patients with abnormal amounts of bromide in the blood, the levels were as follows:

300 mg. or above per 100 cc. of blood.....	12 cases
250 to 300 mg. " " " " " "	4 cases
200 to 250 mg. " " " " " "	18 cases
150 to 200 mg. " " " " " "	17 cases
125 to 150 mg. " " " " " "	15 cases
100 to 125 mg. " " " " " "	57 cases
75 to 100 mg. " " " " " "	80 cases
50 to 85 mg. " " " " " "	83 cases

Total..... 286 cases

Treatment of bromidism consists in discontinuing bromides, forcing fluids, and giving an adequate diet and additional sodium chloride. In severe cases, large doses of sodium chloride may be inadvisable since it causes rapid elimination of bromides, which may injure the kidneys. Except in emergencies, parenteral saline is contraindicated. Treatment should correct the dehydration and malnutrition as well as eliminate bromides and restore chlorides to the body. Finally, when the patient is free of intoxication, attention should be directed to the underlying mental disorder, for which bromides had been used. Unfortunately, too often this condition will be less amenable to therapy. The prognosis in practically all cases is favorable so far as bromidism itself is concerned. The mortality rate is well under 1 per cent. Most deaths are due to pneumonia as a complication. A considerable number of patients will be found suffering from an underlying psychosis. The prognosis will depend upon the individual patient, and the type of mental disorder.

3. Malamud, W., and Rothchild, D.: Barrier between Blood and Cerebral Spinal Fluid, *Arch. Neurol. & Psychiat.* 24: 318-337 (August) 1939.

4. Fremont Smith, F.; Dailey, M. E.; Sloan, D. H.: Distribution of Bromide in Blood Serum and Cerebrospinal Fluid, *Arch. Neurol. and Psychiat.*, 33:764-774 (April) 1935.

5. (a) Harris, T. H., and Hauser, Abe: Bromide Intoxication, *J.A.M.A.* 95:91-96 (July 12) 1930.

(b) Achard, Lucien: Bromide Intoxication and Blood Bromide D-terminations, Read before North Carolina Neuropsychiatric Association, October 28, 1938.

(c) Hanes, Frederic M., and Yates, Anne: Analysis of 400 Instances of Chronic Bromide Intoxication, *South. M. J.* 31:667-671 (June) 1938.

6. Kimberley, L. W.: Blood Plasma Levels in Bromoderma, *J. Investigative Dermatology*, 6:331-312 (Dec.) 1939.

7. Curran, F. J.: A Study of Fifty Cases of Bromide Psychosis, *J. Nerv. and Ment. Dis.* 88:163-192 (August) 1938.

Summary

Bromide therapy is effective, inexpensive and extensively used. Often, however, the dosage is uncontrolled and intoxication follows. The blood level at which poisoning occurs varies with the individual personality and with other factors, such as dehydration, malnutrition, age, arteriosclerosis, etc. The high incidence of bromidism is due chiefly to the unrestricted sale of bromide preparations, and failure of physicians to appreciate symptoms of intoxication. Blood levels above 150 mg. per 100 cc. constitute the toxic zone, although some patients are poisoned with lower levels and a few can tolerate much higher concentrations. Examination of the urine is unreliable, since it may be free of bromides in the presence of a heavy concentration in the blood. The clinical mental picture in bromidism is that of an organic reaction type, characterized by disorientation, impaired memory and thick, slurred speech. Pupillary changes not infrequently simulate general paresis. In a bromide delirium, both visual and auditory hallucinations are likely to be present. Twenty-seven and a half per cent of the patients admitted to the State Hospital at Morganton, North Carolina, showed bromides in the blood, and of this group 4.4 per cent were above the toxic level of 150 mg. per 100 cc. of blood. Treatment is simple, consisting of increase in sodium chloride intake, attention to the dehydration and malnutrition so frequently present, and cessation of bromide medication. The prognosis is good, the mortality being well under 1 per cent. After recovery from the bromide intoxication, an underlying psychosis or neurosis is almost always present, and deserves appropriate therapy.

The Prescription Reflex.—The prescription reflex so highly developed by doctors should be controlled, for the most part, by a very long latent period. In its stead should come understanding of the pressures under which the patient lives his life. What are his fears, anxieties, insecurities? Remorse, lack of independence, failure to achieve or have achievements recognized, unhappy married life, the whole train of events leading to worry and unhappiness—understanding of these is the prime concern of the doctor, the educator, the economist, the industrialist, and the government expert. Because of the wide-spread implications of these important matters, no one may delude himself long about the virtue of what is called socialized medicine, apart from all of the other considerations involved in the organization and maintenance of a sound and healthy society.—Arlie V. Bock: *Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:77 (June) 1942.*

THE PROPER FUNCTION AND HIGHEST USEFULNESS OF CERTAIN MEDICAL SPECIALISTS

JAMES M. NORTHINGTON, M. D.

CHARLOTTE

According to Herodotus, writing in the fifth century B. C., medicine as practiced among the Egyptians was on this wise:

Each physician treated a single disorder and no more; thus the country swarmed with medical practitioners, some undertaking to cure diseases of the eye, others of the head, others again of the teeth, others of the intestine, and some those diseases which were not local. The writer observed that the work was poor for the reason that physicians confined themselves to one disease or disease of one part.

In the France of the thirteenth century there were two classes of barber-surgeons: the clerical (long robe), who had a good many privileges, although their status was far below that of the physicians; and the lay (short robe), who let blood, dressed wounds and sores, and in the armies shaved the officers. Much the same condition obtained all over Europe.

Baas's *History of Medicine* contains numerous accounts of the decline in the quality of medical practice in different countries, as specialism came to take too large a place in the practice of medicine and surgery.

Dr. James A. Downing of Des Moines, speaking before the Eye, Ear, Nose and Throat Section of his State Medical Society in 1929⁽¹⁾, quoted Sir Richard Lake, eminent otologist of London, as saying: "Specialism tends to narrow mindedness, and even bigotry, and the natural tendency of specialism is that the specialty in which the individual is engaged tends so to obsess the mind to the exclusion of general pathological conditions, that they are frequently considered by him as originating, or at least to be in some measure due to, diseases which lie within the small compass of these powers."

In the annual oration before the Louisiana State Medical Society in 1938⁽²⁾, Dr. E. H.

Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

1. Downing, James A.: Address of Chairman, Section Ophthalmology, Otology, and Rhino-laryngology, J. Iowa M. Soc. 19:484-485 (Nov.) 1929.
2. Cary, E. H.: Did Clinical Specialization Anticipate Scientific Medicine? New Orleans M. & S. J. 91:1-6 (July) 1938.

Cary of Dallas, one-time president of the American Medical Association, said that "the title family physician was first used in 1225." He further stated that the early Egyptian physicians carried specialization to such an extreme that the patient as a whole was lost sight of; and that Socrates described the physicians of his time as "ignorant of the whole", and declared that "the part can never be well unless the whole is well."

In discussing before the West Virginia Medical Association in 1930 "The Relation of the General Practitioner to the Specialist," Dr. M. Y. Dabney⁽³⁾, of Birmingham, inquired which specialties will justify their existence and which will become extinct by natural selection. He said he had a friend in New York who "tells me with pride of her physician," and "knows he is a good doctor because he is a specialist." This specialist had taken care of her through two pregnancies and delivered the babies, attended the babies through infancy and childhood, removed adenoids and tonsils for children and parents, and operated on the father for hernia and the mother for gallstones. Dr. Dabney concluded that "the general practitioner would perhaps eventually limit himself to diagnostic work, to handling fairly normal labor cases, to preventive work such as periodic health examinations, to treating *average clinical conditions*, and to the emergencies of practice."

A decade ago Dr. A. A. Houser, of Richmond⁽⁴⁾, called attention to two important facts: (1) that up to very recent times the surgeon was considered in most communities the highest diagnostic authority, and (2) that now the patient is confused and receives inadequate service for not having the guidance of the general practitioner.

In the same meeting Dr. M. L. Breitstein, of Baltimore⁽⁵⁾, stressed the need on the part of the doctor for broad understanding of medicine, and stated that the evaluation of the findings of the specialists belongs to the general practitioner.

Only three years ago, Dr. J. B. Gooch, of New Orleans, said this⁽⁶⁾:

"There is a natural tendency for each

practitioner of medicine to consider, more or less subconsciously, every symptom complex solely from his particular viewpoint." He emphasized the fact that certain conditions can best be treated by a specialist, others by the general practitioner, others by the two working together; and that the general practitioner should be no mere keeper of an index file for the specialists. In summary, he stated:

"On the influence of the family physician rests the entire foundation of our present system of the practice of medicine and our best insurance against any change in this system is the justifying and strengthening of this influence and confidence. This can be accomplished by the general practitioner doing everything in his power for his patients; and the fullest possible cooperation of the specialist with him *from an economic and medical standpoint*."

Dr. Gooch and most of the other modern authors quoted are eye, ear, nose and throat specialists.

In its issue for May, 1942, the *Nebraska State Medical Journal* carries an article on "The Correlation of Ophthalmology and General Medical Practice," by Dr. Harold Gifford, Assistant Professor of Ophthalmology in the University of Nebraska⁽⁷⁾. A good deal of what Dr. Gifford says supports my own views as to the problem before us.

Here is the essence of his paper:

To the patient "eyestrain" is something harmful and may lead to blindness. The word strain means to over-exercise, to use to an extreme and harmful degree. We let patients and people in general go on believing that eyestrain is harmful, while we know or should know it is not. "Have any of you ever seen a disease of the eye caused by eyestrain? Have you ever heard of a smell-strain, or a taste-strain, or a touch-strain?" "If there is no such thing as eyestrain then we should tell people so. One of the greatest fears of most people is blindness. Most of them are firmly convinced that eyestrain, I should say eye fatigue, may lead to loss of sight and a real neurotic is certain of this." Dr. Derby, of Boston, is quoted: "If the general public could learn that eyes are seldom strained this would be a much happier world to live in."

3. Dabney, M. Y.: Relation of General Practitioner to Specialist, West Virginia M. J. 26:645-650 (Nov.) 1930.

4. Houser, A. A.: Relationship of Various Specialties to General Medicine, Virginia M. Monthly 57:291-295 (Aug.) 1930.

5. Breitstein, M. L.: Relation of Oto-Laryngology to General Medicine, Virginia M. Monthly 57:299-302 (Aug.) 1930.

6. Gooch, J. B.: Relation of Specialist to General Practitioner, New Orleans M. & S. J. 90:392-396 (Jan.) 1935.

7. Gifford, Harold: The Correlation of Ophthalmology and General Medical Practice, Nebraska M. J. 27:178-181 (May) 1942.

This thoughtful article goes on:

Eye fatigue "is a harmless word and tells the truth. It is also reassuring and at least one-half of all the neurotics are satisfied if they can be reassured that they are not going to lose their vision if they use their eyes too much. The other half are terribly disappointed because now they have no crutch to lean on. No excuse for their hot compresses and their boric acid eye washes . . . This half needs to see a neurologist to find out why they need this crutch."

"Headache . . . is the universal excuse for breaking an unpleasant appointment or not doing an unpleasant job. Headache is not as easily disposed of as eyestrain, because there are some organic headaches, but I am sure ninety percent or more of the so called eye-headaches if you remove the possibility of eye fatigue are purely an emotional disturbance. If this is the case with headaches and eyestrain, why do we prescribe glasses? I say it should be done only to improve vision and if by doing this we can lessen fatigue, then we are on safe ground."

We must continue, he says, to give better medical care at a cost the people can afford to pay. Specialization is necessary but it increases the cost of medical service to the patient; this increased cost is the factor that people are complaining about; if we deliver better medical service to a greater number of people even at the same cost, we should be able to maintain the free practice of medicine.

The patient with loss of vision or an eye disease usually comes to the specialist directly. Most of the time of eye specialists is spent in dealing with vision and fitting glasses. It is here that our relationship with medicine breaks down. The patient complaining of headache is often referred to an internist for further study. If he comes to the internist he is often referred to the oculist. This causes extra expense. "After the double shuffle, the patient usually still has his headaches and is dissatisfied. If he hasn't already spent all his money on chiropractors and optometrists, he will promptly do this, or join the Christian Science Church."

"If we fitted glasses only to correct vision as it should be done, we might be killing the goose that lays the golden eggs. But I think it should be killed." This is not a new idea. Dr. Gifford quotes W. S. Inman, an Englishman, who wrote in 1921: "Headache, tics,

insomnia, inability to concentrate attention, photophobia, flushing and watering of the eyes, neuralgia, anorexia, constipation, anemia, mental dullness, sleepiness and languor, squint, migraine, hysteria in many of its forms, are but a few of the troubles attributed directly or indirectly in modern English text-books to eyestrain. Some American ophthalmologists have been even more extravagant in their views, and claim to have cured scores of other ills by means of glasses. The mental and emotional state of the patient has not been considered and the possibility of this state determining the eye symptoms instead of the eye conditions causing the general manifestations appears to have eluded both oculist and physician. It is the object of this paper to show that the eye rarely produces other than ocular symptoms, unless the patient is emotionally unstable, and that he frequently is relieved, not by glasses but by suggestion or else by some adjustment of the inner life usually unknown to the oculist."

Dr. Gifford advises the general practitioner:

"A great many ocular symptoms are emotional disturbances and are due to fatigue. Do not refer them to the oculist unless there is a definite disturbance in visual acuity. Study the recent works on neurosis."

He advises his fellow-oculists:

"Prescribe glasses only to improve vision. If the refractive error is small and symptom large, look for an emotional basis . . . Never use the term 'eyestrain.' If the patient uses it explain the error to him. Use the term eye fatigue."

He advises all medical men:

"Maintain your personal integrity. Be absolutely honest." And to those who can be appealed to in no other way, he says: "Don't forget the optometrist and the government are pounding on the door."

A hundred years ago European specialists of high standing accepted no patient not referred by a practitioner of general medicine or surgery. I understand that this is the condition in Europe still.

How much better it would be if this were the case with us, and if each patient referred to a specialist were referred back to his or her own doctor as soon as diagnostic and therapeutic measures requiring special skill and equipment were completed.

Specialists should exercise their excep-

tional skill, acquired by long and assiduous application, on cases exceptionally difficult of diagnosis or treatment. Those cases in which only the diagnosis is difficult should be referred back to the family doctor with an outline of findings and suggestions as to treatment.

If all specialists would accept no patient unless referred by a general practitioner, refer no general practitioner's patient to any other specialist, refer patients back to the general practitioner for all care well within his abilities, proclaim it generally that general practitioners render diagnostic and therapeutic services capably in 80 to 90 per cent of their cases—including those in each specialist's own particular field—specialists would make more money. How? (1) They would not have their time taken up with trivialities, but with exceptional cases for which good fees are paid; (2) doctors now in general medicine and a far greater number of those being graduated would, finding general practice regarded by the public as of just as much honor and esteem, and requiring just as much intellect and learning as any specialty, spend their whole professional lives in general practice, and not specialize as early as possible in order to remove the stigma of being "a mere general practitioner", and to get into the charmed circle where the bright lights play and the golden guineas fall.

Not a few of those who have thought much on the subject and kept a wary eye on trends of the past two-score years believe that the only way for general practice to survive is for it to be upheld in the public esteem—given its due by those doing more glamorous practice. And of a certainty, were general private practice to be destroyed, the whole superstructure of specialism would go down in a mighty crash.

What a grand opportunity to remedy an injustice and at the same time benefit general practitioner and specialist—probably to save the very existence of medicine as we know it!

The Forgotten Man.—The type and formula of most schemes of philanthropy or humanitarianism is this: A and B put their heads together to decide what C shall be made to do for D. The radical vice of all these schemes is that C is not allowed a voice in the matter, and his position, character, and interests, as well as the ultimate effects on society through C's interests, are entirely overlooked. I call C the forgotten man.—W. G. Sumner, 1883.

PEDIATRICS: A CHANGING MEDICAL SPECIALTY

JASPER S. HUNT, M. D.

CHARLOTTE

There are three fields in which pediatricians may find a place for their special knowledge. These are teaching institutions, public health work, and private practice. The immediate problem we are concerned with in this paper is the survival of the private practitioner of pediatrics. Under existing practices he is in danger of extinction. This is not an original thought. The leading pediatricians of the country and the American Academy of Pediatrics are alert to this danger and have sounded warnings that new phases of pediatrics must be embraced, or the pediatrician in private practice will practically cease to exist. His field is constantly narrowed because of competition from hospital outpatient departments and various governmental agencies who employ their own pediatricians. The general practitioner is increasingly well trained in rudiments of pediatrics and extracts his toll from the pediatrician's practice. The American Board of Obstetrics and Gynecology has included a knowledge of infant feeding as a requirement for licensure by that board. All of these progressive changes naturally narrow the range of the pediatrician's indispensability. Yet the fact remains that there will always be ills of childhood which are peculiar unto themselves. As Davison points out, "The private practice of pediatrics, although limited by the federal and state child health programs and the better training of general practitioners and medical students, will still remain because children have needs which are different from those of adults." In the study and better management of these needs lies the future of the private practitioner of pediatrics.

Table 1 is an analysis of the last 2516 consecutive diagnoses recorded in our private practice. Such an analysis should give specific information regarding the most frequent diseases the private pediatrician is called upon to treat, and an evaluation of the treatment methods now employed in the management of these conditions should sug-

Read before the First General Session, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

Table 1

Consecutive diagnoses in 2516 cases in a private pediatric practice

1. Nasopharyngitis, acute	286
2. Gastro-intestinal upset, acute	241
3. Malnutrition and feeding problem	206
4. Normal infant	162
5. Anemia	156
6. Otitis media, acute and chronic	118
7. Behavior problems	93
8. Phimosis	81
9. Lymphadenitis, simple, septic, acute and chronic	81
10. Rickets	78

gest some means to broaden the scope of the pediatrician.

It is to be observed that behavior problems, a non-physical condition, is in seventh place. Yet the pediatrics textbook used during my student days, written only twelve years ago, makes no mention of childhood behavior problems and maladjustments. Such behavior problems as enuresis and masturbation are listed under "disease entities of the bladder" and "injurious habits" respectively. Thus, a new line of endeavor has been uncovered.

Stress should be placed on a problem only in proportion to its importance. The importance of behavior problems may be analytically determined. The human family grows in three ways: intellectually, physically, and emotionally. What is the relative status of these three components of growth and development? One will concede that adequate attention is being devoted to the intellectual growth of children. The very mechanics of daily life require more intellectual ability than our forebears possessed. Physically the race is constantly being improved. Table 2 illustrates the lowering of infant mortality rates in selected sections over the world in the past three centuries. In the United States Registration Area the infant mortality rate has decreased from 100 deaths per 1000 live births in 1915 to 58 deaths per 1000 live births in 1936. When one turns now to the third—that is, the emotional component—of growth and development, an entirely different story is told. Society decrees that individuals beset by behavior problems of a degree sufficient to make them harmful to society shall be removed from society and kept in jails, reformatories, or other places of detention. Penal commitments are increasing, and the majority of those committed are not hardened criminals and repeaters, as one might expect, but adolescents,

Table 2

Infant Mortality Rates
(Deaths per 1000 live births)

1781	England and Wales	280.0
1890	United States Registration Area	205.0
	Raleigh	215.0
1932	United States Registration Area	57.6
	North Carolina	66.5

most of whom have had a fair degree of education. Freud attributed many of the mental breakdowns suffered by his adult patients to episodes which occurred in their early lives. Thus, the adolescent who runs contrary to the rules of society has laid a fair groundwork for unhappiness in later life and possibly for psychosis. The proportion of the population suffering from mental disease is increasing (table 3)⁽¹⁾; these patients occupy 47 per cent of the total number of hospital beds in the United States, and the annual cost of hospitalization varies between 150 and 200 million dollars a year. There are approximately 7000 babies born in the United States every day. According to Gayle⁽²⁾, 1 out of every 25 of these will become insane on reaching adult life, 4 will become profoundly neurotic, 4 will become moderately neurotic, 4 will become mildly neurotic, and 12 will be fairly normal.

Table 3⁽¹⁾

Number of patients present at the beginning of each year and number of first admissions per 100,000 population—State hospitals, United States 1926-1936

Year	Patients Present on January 1		First Admissions	
	Number	Rate per 100,000	Number	Rate per 100,000
1926	246,486	217	52,793	46
1927	256,858	219	56,144	47
1928	264,511	222	59,417	50
1929	272,252	226	60,500	50
1930	280,252	229	62,738	51
1931	292,284	236	67,152	54
1932	305,031	245	67,083	54
1933	321,824	257	69,368	55
1934	332,094	262	69,934	55
1935	342,167	269	72,438	57
1936	353,305	276	—	—

Thus, of the three components of human growth, only that phase having to do with mental health is showing unsatisfactory progress. In view of the fact that abnormal behavior has its basis in early life, it follows that the pediatrician fails to fulfill a very definite obligation to society if he does not practice the science of mental health. If

1. Dorn, H. F.: The Incidence and Future Expectancy of Mental Disease, Pub. Health Repts. 53:1991-2004 (Nov. 11) 1938.
2. Gayle, R. F., Jr.: The Problem in Caring for the Mentally Sick in Virginia, Virginia M. Monthly 66:6-12 (Jan.) 1939.

this idea is a new one, and we have shown that it is, then those of us already in practice must learn how to deal with behavior problems. I quote Davison again: "To remain successfully in private practice, the pediatrician must continue to lead in preventive measures and also include mental hygiene and adolescent problems in his field." The modern pediatrician must learn to correct the first recognizable outcropping of abnormality. These initial factors are not sufficiently recognized and stressed by pediatricians. In order to arrive at a few of the primary deviations from the normal, we have analyzed the behavior cases under our care. Forced feeding and giving the bottle past the first year of life are the beginning of behavior problems in 79 per cent of our cases.

Mental hygiene is assuredly not the only field a pediatrician must master. A vast majority of the diagnoses made in the private practice of pediatrics (table 1) are of somatic nature, notably upper respiratory infections with their sequelae. One does not have to be a medical specialist to treat a running nose. This is the general practitioner's job, and whether the pediatrician likes it or not, he is making it his job. However, it does require a medical specialist to treat the 25 per cent of those upper respiratory infections which are initiated by an underlying allergy. Herein lies the second field which the private pediatrician should incorporate in his struggle for survival, as the Academy meetings of recent years persistently point out. I have no intention of implying that a pediatrician should be a mental hygienist and an allergist. I simply state that the pediatrician should acquire a knowledge of these two fields in addition to his knowledge of infant feeding and other time honored details of the specialty of pediatrics.

Under the present system of the private practice of pediatrics, the pediatrician cannot include the fields of mental hygiene and allergy because of the lack of time. Before his monopoly on otoscopes and formula writing was overthrown, all the pediatrician required was a properly packed medical bag and an automobile. One cannot treat allergy or behavior problems by a house to house canvass because of the time required and because equipment cannot be transported to the home. The aid of an adequate staff of assistants is essential. Good pediatrics can-

not be practiced in the home. It is no more harmful for a sick child to be transported to the pediatrician's office in an enclosed automobile over paved streets than it is for him to stay at home. It is not to be inferred that no children should be seen in the home. They will continue to be seen in the home just as infants continue to be born at home. However, an increasing majority of house calls will be made by the general practitioner. The man calling himself a pediatric specialist must accept the fact that he can no longer be a general practitioner with an age limit. If the modern specialist in pediatrics is unable to see this point, the specialty will have poor chance of survival.

Summary

Of the three classes of pediatricians, the private practitioner of pediatrics is in danger of extinction. We have demonstrated on the basis of an analysis of our private practice that the most frequently encountered diseases of children are at present being inadequately dealt with. We have recommended changes necessary to correct this situation through the inclusion of mental hygiene and allergy in the practice of pediatrics. We have pointed out that these fields cannot be included unless time is conserved. We have shown that only an office and hospital practice can meet this demand for time conservation.

The Liberating Ideas of Science.—It can hardly be emphasized too strongly that it is not man's material comforts nor even the alleviation of his physical pains which are the greatest gifts of science to mankind. Science has freed men's minds. Foremost among liberating ideas is the belief that there is order and law in the universe and that this order can be discovered by questioning nature herself. Such belief was rare in the middle ages when processes of nature were generally attributed to supernatural causes: winds and storms to demons, comets and epidemics to the wrath of the Almighty toward a sinful world, and investigations of nature were persecuted by both church and state as Satanic magic and sacrilegious questioning of the acts of God. The Copernican theory widened our physical horizons and showed our earth a tiny speck in a universe of worlds. The theory of evolution brought a unity to our ideas of the organic world. The discovery of the mechanism of inheritance allowed an evaluation of the contributions of heredity and environment to the personality of individuals. The experimental method with adequate controls is the most valuable tool science has yet developed. Its understanding and use in daily life would mean more than all the scientific facts that schools can teach.—Albert Francis Blakeslee: *Individuality and Science*, Science 95:8 (January 2) 1942.

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IS THE MEDICAL PROFESSION OVERMILITARIZED?

In the "Washington Merry-Go-Round" for October 8, Drew Pearson states that there is increasing concern over the problem of drafting a large army and supporting it without making serious inroads into civilian needs. Most of the argument centers around the medical profession:

"White House advisers point to physicians as an example. Today the army is plucking doctors from civilian life by all sorts of methods, first promising them commissions if they enlist, then threatening that if they don't enlist they will be drafted. Students in medical schools have been taken in as reserve officers, and, in some cases, third-year medical students who couldn't pass the officers' physical exam, are being drafted as buck privates—despite three years of medical training.

"The goal which the army seeks is seven doctors to every 1,000 men, whereas the British have found the optimum figure to be four and a half.

"Result is that many small communities find themselves without a doctor, and the situation will get worse. For at the rate of seven doctors per 1,000 men, a 10,000,000-

man army will need 70,000 doctors and there are only 150,000 to 160,000 in the entire United States—of which only 105,000 are young enough for service in the medical corps."

That there is ground for the concern expressed by Mr. Pearson was shown in the article by Mr. Pickens, of the Hospital Section of the Duke Endowment, in last month's NORTH CAROLINA MEDICAL JOURNAL⁽¹⁾. Mr. Pickens gave figures to show that in thirty-eight counties of North Carolina the ratio of physicians to civilian population on July 1, 1942, ranged from 1:1,208 in Dare County to 1:5,556 in Tyrrell, the average being 1:3,121.

A little calculation makes it evident that the army has almost exactly twenty-two times as many doctors per capita as has the civilian population of these thirty-eight counties. If the British army can get along with two-thirds the proportionate number of medical men allotted to our army, it may not be unpatriotic to renew the question raised by this journal a year ago⁽²⁾, "as to whether the present division of doctors between our military and civilian population is equitable or wise."

* * * *

Soon after the above was written, the Associated Press stated (October 29) that a Senate subcommittee on manpower, through its chairman, Senator Pepper of Florida, had issued a report asserting that there had been "a tremendous overmilitarization of the doctor supply at the expense of the civilian population." The report charged that "foolish and dangerous" methods used to recruit physicians for military service have resulted in "hoarding and freezing unused doctors in the American armed forces in a ratio double that of the British."

Characterizing the condition as "acute and dangerous", the report urged that "The President, as commander-in-chief, should order a survey to be made of over-supply and under-supply of medical personnel for both the armed forces and civilian needs," that a reallocation be made when necessary, and that "Instruction should be given to the war manpower commission to cease its procurement drive for doctors in all states where quotas have already been attained."

The report further declared that rural areas are contributing from two to four times the proportion of doctors that are coming from urban areas.

This report of Senator Pepper's subcommittee powerfully strengthens the contention of the NORTH CAROLINA MEDICAL JOURNAL that the distribution of doctors between military and civilian populations has been far from equitable. For more than a year, at virtually all medical meetings held, terrific pressure has been extended to force all able-bodied doctors under 45 to go into the army. The overwhelming majority of American doctors are willing and anxious to serve their country where they can do most good, whether in the army, the navy, or civilian practice. Those who are left behind to care for the civilian population, whether they are too old to wear a uniform or whether they are under 45 but adjudged essential to their communities, should not have to feel humiliated. They will have to work harder than ever before, and will serve their country just as truly as if they were in service.

The foregoing paragraph is not meant to detract one bit from the glory due our military heroes, medical and non-medical. In our patriotic fervor, however, let us not lose our sense of proportion. It is as important to keep defense workers in the factories as to keep fighting men in the trenches. Warfare nowadays more than ever involves the total population; and civilians as well as soldiers need medical care.

1. Pickens, Marshall L.: The Effects of the War on the Medical Service in Thirty-Eight North Carolina Counties With Limited Personnel, North Carolina M. J. 3:370-371 (October) 1942.

2. Editorial, North Carolina M. J. 2:360 (October) 1941.

* * * *

THE EPILEPSIES

Few words used in medicine are more filled with connotations of prolonged and dreadful suffering than the term "epilepsy". Doctor and patient alike stand appalled by the fearful seizures which characterize the major form of the disease.

As a result of the work of many observers the problem of convulsive seizures has been much more clearly defined in recent years. The newer concepts are well presented in the excellent book of Dr. W. G. Lennox⁽¹⁾, a Boston physician who has devoted his life largely to the study of the epilepsies. This book should be in the hands of all practicing physicians.

The discovery that the electrical activity of the brain can be graphically recorded, after the principle of the electrocardiogram (EKG), has led to the development of the science of electroencephalography (EEG).

By this technique it has been found that the brain subject to convulsive seizures shows a type of disordered brain wave which is fairly characteristic, although disordered waves are also seen in other conditions. Here we are dealing with an "instrument of precision" which requires such expertness that only the readings of one with a great deal of experience can be trusted. It is improbable that the manufacturers will be able to create brain wave specialists after the manner in which they have created so many "heart specialists" with their portable electrocardiographs.

Increasing knowledge of the "symptomatic" and "idiopathic" epilepsies has been accompanied by advances in therapy, both surgical⁽²⁾, and medical⁽³⁾. The bromides have been replaced in part by phenobarbital, and now the new drug diphenyl hydantoinate (phenytoin, Dilantin Sodium) seems destined by virtue of its superior anticonvulsive properties to supersede both the older remedies. It must be used with greater care, and under more stringent supervision than was necessary with bromides and luminal. As is the case with most potent remedies, it should be given to the point of mild toxicity to secure optimum results.

It is cheering to be able to report real advances in the diagnosis and therapy of the convulsive disorders; every physician responsible for the care of such patients should familiarize himself with this newer knowledge.

1. Lennox, W. G.: Science and Seizures: New Light on Epilepsy and Migraine, New York, Harper & Brothers, 1941.

2. Penfield, Wilder and Erickson, T. C.: Epilepsy and Cerebral Localization, Springfield, Illinois, Charles C. Thomas, 1941.

3. Lennox, W. G.: Gains Against Epilepsy, J.A.M.A. 120: 449-453 (Oct. 10) 1942.

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WHAT LIES BEHIND THE DIAGNOSIS OF SCIATICA?

In years gone by neurology has been greatly neglected in the teaching of medical students, with the inevitable result that the average physician is incompetent in this field. A doctor who would resent an implication that his knowledge of heart or pulmonary disease was sadly deficient will admit without embarrassment that he knows very little neurology. This is due to the well-known fact that we readily admit a deficiency shared by all.

This defect in medical education seems all the more reprehensible when one realizes

that fully half the patients who consult physicians have complaints which demand a sound knowledge of the nervous system for their understanding and relief. Most so-called "organic" disease has an aura of functional nervous reaction, and the wise physician knows that his "cures" are very frequently due to the proper handling of this secondary manifestation of what is often incurable structural damage.

The accusation is frequently made that the therapy of diseases of the nervous system is discouraging. All too often this is the defense reaction of ignorance, for many of the most brilliant therapeutic achievements are the reward of intelligent neurologic diagnosis. A pertinent proof of this statement is the present status of the condition known as ruptured intervertebral disk.

Walter E. Dandy, in a recent paper⁽¹⁾, has summarized his own characteristically brilliant work in the diagnosis and treatment of this condition, giving full credit to other workers such as Love and Walsh, and Spurling and Grantham. He concludes his paper with the confident remark that "the foregoing additions leave little to be added subsequently in making the diagnosis and treatment of defective lumbar intervertebral disks almost free of error, and with almost perfect results." Can such a statement be matched in any other field of medicine?

All great therapeutic advances are tinged with regret, for one thinks inevitably of the vast numbers who suffered and died because of our previously defective knowledge. Now that we know that the vast majority of "sciaticas" and disabling lumbar pains can be traced to the pressure of ruptured intervertebral disks, we shudder to think of the pain and disability which might have been alleviated by the possession of such knowledge in the past. Such reflections should keep us humble, and stimulate us to search indefatigably for the truth which makes men free from suffering and disability.

1. Dandy, Walter E.: Improved Localization and Treatment of Ruptured Intervertebral Disks, J.A.M.A., 120:605-607 (Oct. 24) 1942.

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FATIGUE

One of the most significant of Hitler's recent actions is the restoration of the eight hour working day in Germany. This step, one may be sure, was motivated not by any humanitarian impulse, but from the very practical consideration that longer hours did not pay the Reichstadt in goods produced.

It may be recalled that when, many years ago, Henry Ford inaugurated a working day of eight instead of ten hours he was cordially hated by his fellow manufacturers for having wrought havoc in industry. When, however, the amazing result ensued that without any increase in personnel or change of equipment, production stepped up appreciably, others were quick to fall into line.

The importance of fatigue is not sufficiently recognized, perhaps because its results can not be demonstrated by instruments of precision and because its effects are not immediately apparent. The James M. Anders Lecture XIX⁽¹⁾, given on April 1, 1942, by Dr. Arlie V. Bock, discussed this subject clearly and completely. As Dr. Bock points out, physiological fatigue "is a natural product of the use of the body," and has its advantages. Pathological fatigue, however, "comes from strain, from lack of experience, from striving for ends beyond reach, from demands upon organisms unfit or unprepared to meet them."

Dr. Bock points out that fatigue not only plays a part in such recognized conditions as hyperthyroidism, peptic ulcer, and the neuroses, but is also of importance in less well recognized diseases such as congestive heart failure, migraine, arthritis, certain dermatological conditions, and respiratory infections. Most physicians have learned by personal experience that the fatigue of long hours, loss of sleep, and worry over very sick patients often paves the way for the virus of a cold or of influenza, for pneumococci, or for a spastic colon or peptic ulcer.

The average individual, Dr. Bock thinks, suffers from fatigue more often because he is not happy in his environment than from any other factor. "Those who are experts at worry become the most fatigued . . . If we look for causes of unhappiness, using this term in a broad sense, and do what we can to remove them, we shall have done much to relieve fatigue."

Dr. Bock might have added that if the physician himself would take more time for rest and wholesome recreation, would eat his meals as regularly as possible, and would cultivate the habit of leaving his worries outside the threshold of his home, he would be better prepared to minister to the diseased minds as well as the diseased bodies of his patients.

1. Bock, Arlie V.: Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:75-81 (June) 1942.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

CRISTOPHER JOHNSTON, M. D.

and

GEORGE MARGOLIS, M. D.

Clinical Summary

DR. JOHNSTON: This 38 year old white man was admitted to Duke Hospital with the complaint of pain in the lower thorax and back of three or four months' duration.

The family history and marital history were irrelevant. The patient was said to have had asthma for the past ten years. He had had the usual childhood diseases without sequelae. He had had pneumonia at the age of 15 and influenza one year ago. Three weeks prior to the onset of the present illness he began having dull headaches in the temporal area, unassociated with nausea, vomiting, or visual disturbances. His appetite and digestion had been good. There were no urinary complaints. Fifteen years ago the patient had a Neisserian infection, from which he made an uneventful recovery.

The patient dated the onset of his present illness to approximately eight years ago, at which time he began having a dry, hacking cough, productive of small amounts of white, frothy sputum. The character of this sputum had changed in the past three or four months, becoming yellow and more purulent; during the past six or seven weeks it had contained bright red blood. During the past six months he had lost 21 pounds in weight, and for three or four months had complained of dull, aching pain in the right chest and lower dorsal region. Three months ago, for approximately one week, he had had night sweats. Five weeks prior to his admission to the hospital, within a twenty-four hour period, he lost his voice, and had been speaking in a whisper ever since. On admission he stated that he was raising approximately one pint of sputum daily, and that during the past two weeks he had had some difficulty in swallowing.

His temperature on admission was 37.3 C., pulse 90, respirations 18, and blood pressure 120 systolic, 90 diastolic. The patient was an undernourished, coughing male, who was

unable to speak above a whisper. There was no generalized lymphatic enlargement. Marked limitation of motion of the left shoulder was noted, with point tenderness in the head of the humerus; movement of the shoulder caused severe pain, and there was some atrophy of the shoulder and upper arm muscles. The head was normal. There was no exophthalmos; the pupils were equal and reacted to light and on accommodation; the fundi were normal. There was complete adentia without replacements. The trachea was in the midline; the thyroid was not enlarged. Slight asymmetry of the chest with atrophy on the left was noted; expansion was equal. Whispered voice sounds were increased over the right upper lobe posteriorly; breath sounds were moderately increased over the left chest, where there were a few coarse rales and rhonchi; anteriorly, numerous coarse rales were heard over the entire left chest. The heart was not enlarged, and no murmurs were heard. The rhythm was regular, the rate normal. The abdomen and genitalia were normal. Rectal examination was negative, except for external hemorrhoids. There was no clubbing, cyanosis, or deformity of the extremities, and no edema. Neurological findings were within normal limits.

The hemoglobin was 78 per cent, and there were 4,200,000 red blood cells and 14,000 white blood cells, with 60 per cent polymorphonuclears, 3 per cent large lymphocytes, 21 per cent small lymphocytes, 9 per cent eosinophils, and 7 per cent monocytes. The blood Wassermann and Kahn tests were negative, and examination of the urine was negative. A fresh blood smear was not remarkable. The sedimentation rate, corrected, was 30 mm. per hour. A smear of sputum showed many gram-positive cocci; some fungi were seen. Sputum culture revealed *Bacillus influenzae* alpha, streptococcus, and *Staphylococcus albus*. Skin tests to *Blasatomyces*, *Monilia albicans*, and *Sporotrichum* were negative after thirty minutes, twenty-four hours, and forty-eight hours. A gastrointestinal series showed nothing unusual. Fluoroscopy and stereoscopic views of the chest showed both diaphragms limited in motion, with the left almost immobile; there was considerable thickening of the bronchi about both hila, especially on the left and radiating outward into the left upper lobe; the angles were clear; the heart was not en-

larged. In the oblique view there appeared to be a questionable cavity just lateral to the left hilum. Films of the left shoulder showed nothing abnormal. Pharyngoscopic examination showed paralysis of the left vocal cord. On bronchoscopic examination the left main bronchial wall in the region of the upper lobe orifice appeared fixed, without ulceration or fungation; no bleeding was encountered.

The patient remained in the hospital for approximately two weeks, during which time he ran an afebrile course and complained only of pain in the left shoulder region. Repeated sputum examinations failed to reveal any acid-fast organisms or fungi. The leukocyte count remained between 13,000 and 14,000, and he brought up approximately 100 cc. of sputum a day. Elastic tissue was found on several occasions. At 1 a. m. on the thirteenth hospital day he was seen by the night nurse and had no complaints. Ten minutes later he turned on his light and was found by the nurse sitting on the edge of the bed having a severe pulmonary hemorrhage. He expired shortly thereafter.

Discussion

DR. CRISTOPHER JOHNSTON: It seems clear from the history that we are dealing with a patient who for a long time had had asthma. This diagnosis is further strengthened by the presence of an eosinophil count of 9 per cent. However, it seems equally clear that there was a definite change in the picture a few months ago, with a change in the character of the sputum. More recently there had been hemoptysis.

The finding of a cavity on physical examination and the massive fatal hemorrhage might fit well with the diagnosis of a rapidly advancing tuberculous process, or a fungus infection. However, it must be borne in mind that repeated sputum examinations failed to reveal tubercle bacilli or fungi, and that the course in the hospital was entirely afebrile. An aortic aneurysm, with slow oozing of blood into a bronchus and the final massive hemorrhage, might conceivably have produced a similar train of events and would also serve to explain the paralysis of the left vocal cord; but such a diagnosis need not even be considered here, in view of the x-ray findings.

The most logical diagnosis, therefore, seems to be a bronchogenic carcinoma with central necrosis and cavitation. The only unusual feature in the case is the termination

by severe pulmonary hemorrhage. A slow oozing of blood producing small hemoptyses is the rule in bronchogenic carcinoma, but in my experience, severe hemorrhages are unusual.

Dr. Johnston's Diagnosis

Chronic asthma

Bronchogenic carcinoma, with central necrosis and cavitation.

Anatomical Discussion

DR. GEORGE MARGOLIS: This patient furnishes an example of an unusual termination of a malignant pulmonary neoplasm. The tumor was a squamous cell carcinoma having its origin in the left upper lobe bronchus close to the hilum. It had produced a stenosis of the involved bronchus, and distal to the point of obstruction secondary infection with cavity formation had occurred. The massive fatal pulmonary hemorrhage had its origin from this cavity. Grossly, it was not possible to recognize the point of bleeding in the shaggy, irregular cavity wall, which contained much tumor in addition to the inflammatory reaction. A section through this region showed a vein of large caliber, with its entire lateral wall, which lay adjacent to the cavity, destroyed by the inflammatory reaction. While this might not have been the source of the massive hemorrhage, it furnished an excellent example of the process which led to the bleeding. A few other vessels near the cavity wall showed a similar, but less extensive change.

Another interesting feature of the tumor was its extensive invasion of the mediastinal structures. It had infiltrated about several of the nerves here, and had invaded the wall of the left auricle. The only distant metastases were found in the right kidney.

In the lower lobe of the left lung there was a marked ulcerative bronchitis, with extensive pulmonary fibrosis and endarteritis, and dense fibrous pleural adhesions. The right lung was free of these alterations.

Anatomical Diagnosis

Squamous cell carcinoma of the upper lobe bronchus, left lung.

Obstruction of the upper lobe bronchus, left, with secondary infection and cavity formation distal to obstruction.

Infiltration of tumor into mediastinal structures and into the left auricular myocardium.

Metastases to peribronchial nodes and right kidney.

Erosion of a branch of the pulmonary vein. Massive fatal pulmonary hemorrhage.

Chronic ulcerative bronchitis, left lower lobe, with extensive pulmonary fibrosis and endarteritis, left.

Fibrous pleural adhesions, left.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M. D., LL. B.

Raleigh

Contractual relationship. A physician is liable for neglect of patient only after relationship of physician and patient is established.

This is a case in which the plaintiff, the administratrix for an intestate, sued a physician in an effort to recover damages for alleged negligent treatment of the intestate.

The plaintiff alleged that on May 18, 1930, her son, the intestate, who was then 22 years old, while riding in a motor vehicle driven by another person at a rapid and reckless rate of speed, was suddenly thrown from the vehicle in turning a curve, and as a result thereof his head struck a telephone pole, fracturing his skull, and otherwise injuring him to such an extent that he was rendered unconscious; that the injured man was immediately carried to the hospital of the defendant by his companions, and that the defendant accepted him as a patient, but failed to use ordinary care and skill in the diagnosis and treatment of said patient, so as to ascertain the extent of his injuries, and failed to make an x-ray examination of the patient's head. She alleged further that after keeping the unconscious man in the hospital for a short period of time, the defendant abandoned the treatment of the patient, and directed that he be returned to his home, a distance of eight miles; and that a few days later the plaintiff's intestate died of a concussion of the brain. This action was instituted to recover damages upon the theory that the defendant had failed to make a proper examination of the injured man in order to discover the extent of his injuries, and had been negligent in the treatment of the patient.

The defendant filed an answer, denying that he had accepted the plaintiff's intestate as a patient, and alleging that the plaintiff's intestate was brought into his hospital temporarily, in an intoxicated and unconscious condition, and that the companions of the injured man took him home with instructions to return him later when he became sober. He was never returned, and the defendant said that he was never requested to render any treatment.

The evidence tended to show that the patient was carried to the defendant's hospital as alleged, and that the defendant gave emergency treatment, made a cursory examination, and then directed the companions to take the injured man home. There was conflicting evidence as to the defendant's allegations that he asked that the patient be returned when sober.

This case was nonsuited in the Superior Court, whereupon the plaintiff appealed to the Supreme Court. The Appellate Court held that the evidence in the case was insufficient to establish a relationship of physician and patient, and that the act of the physician in not accepting the case was not a proximate

cause of the injury from which the patient suffered, and which eventually brought about his death. As a consequence, the judgment of the Superior Court was upheld.

It should perhaps be mentioned in this connection that it was the feeling of the Supreme Court that a physician is not bound to accept a case unless he feels that he should do so, and no doubt the doctor in this particular instance was of the opinion that he could not be of much service to a man in an intoxicated condition, especially in a private hospital, where there was a possibility that he might be a disturbing influence among the other patients. In any event, the court held that he was justified in not accepting the case. There is always a danger, however, of adverse public sentiment when a doctor is called in an emergency of this kind and does not exert every effort in behalf of the patient. (North Carolina Supreme Court, Vol. 201, Page 42. Decision rendered Spring Term, 1931.)

MILITARY MEDICINE

OFFICE OF CIVILIAN DEFENSE

October 15, 1942

EMERGENCY BASE HOSPITALS

The Medical Division of the U. S. Office of Civilian Defense, through its Regional Medical Officers and State Chiefs of Emergency Medical Service, has now made emergency provision for the establishment of a chain of Emergency Base Hospitals in the interior of all the coastal States. They will be activated only in the event of an enemy attack upon our coast which necessitates the evacuation of coastal hospitals. Each base hospital will be related to the casualty receiving hospital which has been evacuated and it is expected that the staff will be recruited largely from the parent institution.

In order to meet a sudden and unexpected crisis without delay, arrangements have been completed with State authorities for the prompt taking over of appropriate institutions in the interior of the State for this purpose and with local military establishments for the transportation of casualties and other hospitalized persons along appropriate lines of evacuation.

More than 150 hospitals in the coastal cities are in the process of organizing small affiliated units of physicians and surgeons, which will be prepared to staff the Emergency Base Hospitals if they should be needed. These units are composed of the older members of the staff and those with physical disabilities which render them ineligible for military service, and of women physicians. In order that a balanced professional team may be immediately available the doctors comprising units are being commissioned in the inactive Reserve of the U. S. Public Health Service so that, if called to duty, they may receive the rank, pay and allowances equivalent to that of an officer in the armed forces.

Dr. George Baehr, Chief Medical Officer of the U. S. Office of Civilian Defense, states that the members of these affiliated hospital units will continue to remain on an inactive status for the duration of the war, unless a serious enemy attack occurs in their Region which necessitates the transfer of casualties to protected sites in the interior. Their commissions may be terminated upon their request six months after the end of the war, or sooner if approved by the Surgeon General. Such approval will be given in the event such officer desires active duty in the Army or Navy.

OFFICE OF WAR INFORMATION WAR MANPOWER COMMISSION

"The Directing Board of the Procurement and Assignment Service is pleased to announce that 95 per cent of the 1942 procurement objective of medical officers for the armed forces has already been met. Toward this total a number of states have supplied more than their share of physicians and only a few states are lagging behind in their quotas. It is from these states that the additional physicians needed during the current year should come.

"The recruitment of such a large number of physicians in a few months is a remarkable achievement and another demonstration of the traditional patriotism and unselfishness of the medical profession. In this achievement, and particularly in those of its members who are 'in service', the profession can justifiably take pride.

"The end, of course, is not yet. Increases in the armed forces will necessitate more medical officers and additional demands will be made upon the profession for medical services in critical war production areas. The Directing Board is convinced, however, that the physicians of this country will respond to future calls for service, whatever they may be, in the same splendid manner with which they have already volunteered for service with the armed forces."

Frank H. Lahey, M. D.
Harold S. Diehl, M. D.
Harvey B. Stone, M. D.
James E. Paullin, M. D.
C. Willard Camalier, D. D. S.
of the Directing Board

CLASSES IN MEDICAL ASPECTS OF WAR GASES

A series of classes in the medical aspects of war gases is being organized and sponsored by the Office of Civilian Defense. The classes are designed to bring to the practicing physician, emergency medical officers, and such other key personnel of civilian defense, as are interested, the latest information on the action, treatment, protection against, and decontamination of, war gases.

The first class was held in Winston-Salem on October 25, and was attended by about seventy-five physicians. Classes have been scheduled as follows:

Fourth Medical District, Wilson.....	November 5
Seventh Medical District, Charlotte.....	November 14
Tenth Medical District, Asheville.....	November 16
Second Medical District, New Bern.....	November 22
First Medical District, Ahoskie.....	November 24
Fifth Medical District, Fayetteville.....	December 8

Classes for the remaining district will be announced later. All classes will convene at 2 p.m. and will continue until about 6 p.m., when a recess will be taken for dinner. Classes will reconvene at 7:30 p.m. and will be concluded about 9 p.m. This schedule will enable those attending to return home the same day.

The classes will be conducted by Dr. Haywood M. Taylor, Associate Professor of Biochemistry and Toxicology, Duke University School of Medicine and State War Gas Consultant; Dr. George T. Harrell, Assistant Professor of Medicine, Bowman Gray School of Medicine, and Assistant State War Gas Consultant; and Dr. James P. Hendrix, Associate in Medicine, Duke University School of Medicine and Assistant State War Gas Consultant.

An outline of the classes is as follows:

I. Chemical Warfare Agents—History—Classification

- A. Introduction—General Principles
- B. Classification
 - 1. Chemical and Physical Properties
 - 2. Tactical Use
- C. Mode of Action
 - 1. Lung irritants
 - 2. Vesicants
 - 3. Sternutators
 - 4. Lachrymators
 - 5. Systemic poisons
 - 6. Smokes
 - 7. Incendiaries
- II. Pathology—Symptomatology—Differential Diagnosis and Treatment
 - A. Lung Irritants
 - 1. Locus of Action and Solubility
 - 2. Pathology and Pathologic Physiology
 - 3. Diagnosis
 - 4. Therapy
 - B. Vesicants
 - 1. Persistency
 - 2. Pathology and Pathologic Physiology
 - 3. Clinical Features
 - 4. Therapy
 - C. Systemic Poisons
- III. General Protective Measures
 - A. Civilian protection
 - B. Gas masks
 - C. Protective clothing
 - D. Shelters
 - E. Decontamination
 - 1. Water and food
 - 2. Personnel
 - 3. Hospital protection
 - 4. Equipment
- IV. Thermal Burns
- V. Neuropsychiatric Problems
- VI. Demonstration of Gases
 - Odor Identification

Psychogenic Aspects of Fatigue.—The psychogenic aspects of fatigue and their relations to illness still await scientific proof. Apparent cause and effect have long constituted the core of wishful thinking. Nevertheless, those who are experts at worry become the most fatigued. Next in line are those who are dissatisfied and unhappy, and last a large group swamped by the dull and dreary grind of daily tasks. We are quick to recognize shell shock in the soldier and sailor. We seem loath to recognize the same or analogous pictures in our patients when they follow from less dramatic, more insidious factors, slowly but surely at work over the months and years. Some of these influences we can stop, some we can modify, and for some we can teach acceptance. As a people we are victims of time and circumstances. We have too many bad conditioned reflexes; we know too many things that are not so. We are conditioned by fear fostered by commercial advertisers. We have crutches instead of feelings of independence. We have an increasing divorce rate. Emotions rather than reason control our acts. Whenever sound established routines, whether of church or state, are disrupted, as is now the case on a grand scale in Germany, and in their stead are placed chimerical objectives such as *Lebensraum*, disorganization of society follows. We hear much of subconscious motivations but if as physicians we could learn to deal with the conscious field we should greatly relieve the majority of our patients. If we look for causes of unhappiness, using this term in a broad sense, and do what we can to remove them, we shall have done much to relieve fatigue.—Arlie V. Bock: *Fatigue, Tr. and Studies Coll. Physicians Philadelphia 10:80 (June) 1942.*

BULLETIN BOARD

PRESIDENT'S MESSAGE

Industrial Commission

Last fall the Committee To Study Industrial Fees, of which Dr. Joseph Elliott, of Charlotte, is chairman, had two meetings with Governor Broughton. At the second of these meetings the three Industrial Commissioners, Mr. Wilson, Mr. Journey, and Mr. Kimzey, together with their Medical Advisor, Dr. Horton, were present. After hearing the complaints and the facts, the Governor instructed the Industrial Commission as follows:

- (1) Approve all bills submitted by doctors when the schedule is adhered to.
- (2) Give the doctor the benefit of the doubt in questionable cases.
- (3) Study the prevailing fees in various communities and be guided thereby in office visit allowance.

Complaints are still heard as to the unjustifiable reduction of bills. In view of this a meeting was arranged and held September 10, 1942, with the full Industrial Commission and their Medical Advisor, with the Medical Advisory Committee to the Industrial Commission, composed of Drs. Battle, Miller and Lyday, and with Dr. Elliott and myself.

At this meeting the Industrial Commission was informed of these continuing complaints and an effort was made to reach some agreement and arrangement whereby reductions would not be necessary. Figures were presented by the Industrial Commission to show that whereas the percentage of reduced bills during the previous three years had averaged something over 18 per cent, it has been reduced to about 11 per cent during 1942.

Unfortunately, but according to the record, there continue to be a very large number of bills submitted which disregard the fee schedule. It would seem either that many physicians do not have a copy of this schedule of fees, or that they do not avail themselves of it in making the charge for their services. It is urged that every physician who does not have a schedule of fees obtain one by writing the Industrial Commission, and that every physician adhere to this schedule.

It is not meant to imply that all the fault is with the physician. Cuts still continue to be made which to us seem arbitrary and unjustified. Especially is this so as regards

frequency of visits, both office and home, and as regards certain small items that are not and can not be specifically enumerated in any schedule. But by a better understanding, it is hoped that these causes of dissatisfaction and irritation can be lessened or done away with. I can assure you that your officers and committees and the Industrial Commission are cooperating in an effort to bring this about.

Mr. T. A. Wilson, Chairman of the Industrial Commission, has expressed his willingness to attend our district meetings in an effort to create a clearer understanding of the many problems faced by the Industrial Commission. He has already been able to be present at several District Society meetings, and has spoken at some of them.

In summary it is urged that:

- (1) Bills be submitted according to schedule.
- (2) When a specific item is not covered by the schedule, charge be made according to the custom prevailing in the community.
- (3) When the case is so unusual as to require an abnormal amount of treatment, or an unusual number of visits, the final report and bill be accompanied with a letter of explanation directed to the Industrial Commission and not to the insurance company.
- (4) In case of dissatisfaction with the settlement of any bill, it be appealed to the Medical Advisory Committee and/or a hearing with the Industrial Commission and the Medical Advisory Committee be asked, so that all particulars can be thoroughly explained and understood.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. C. C. Carpenter, Dean, and Dr. Tinsley Harrison, Professor of Medicine, attended the meeting of the Association of American Medical Colleges held in Louisville, Kentucky, October 26-28.

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Dr. Robert B. Lawson, Assistant Professor of Pediatrics, attended the meeting of the American Academy of Pediatrics in Chicago, November 4-7.

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Dr. C. Nash Herndon, of the Department of Medical Genetics, attended the Ninth Institute on Public Health Education and the Seventy-First Annual Meeting of the American Public Health Association in St. Louis, October 25-30. He presented an exhibit on Medical Genetics at the Public Health Association meeting.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Vital statistics reports already are beginning to reflect a natural increase in the State's population. During August, eight months after Pearl Harbor, there were 8,099 babies born in North Carolina, as compared with 7,370 during the corresponding month a year ago—an increase of 729 in a single month, while the birth rate for August of this year was 26.5, as compared with an annual rate of 23.6 in 1941, and of 22.7 in 1940.

Dr. G. M. Cooper has stated:

"Nearly every month this year the infant and maternal death rate in North Carolina has shown a reduction over the corresponding month last year. In August, there lacked only one of being a hundred fewer deaths among infants under a year old than occurred during August, 1941, notwithstanding the fact that there were nearly eight hundred more births.

"Both the infant and the maternal death rate reached the lowest point in August for any month in the history of North Carolina since vital statistics have been kept."

* * * *

Among the services which the North Carolina State Board of Health renders none is more important than that which has as its objective the rehabilitation of crippled children.

The present program is made possible by State appropriations, federal grants, and limited local public and private funds, which aggregate approximately a quarter of a million dollars a year and make possible the rehabilitation of hundreds who, otherwise, would grow up warped and twisted and unfitted for the duties of life.

As of June 30, 1942, there were 19,877 crippled children on the register, representing an increase of twenty per cent during the past two years. It should be borne in mind that the register is not static, as considerable numbers are removed at quarterly intervals for various reasons.

This work is carried on under the direction of the Crippled Children's Department of the State Board of Health's Division of Preventive Medicine. The agency reports increased progress over the previous two-year period in respect to its original objectives of: (1) locating and registering cripples under 21 years of age; (2) providing specialized diagnostic services; (3) providing care under which specialized treatment may be carried out; (4) following and supervising the progress of children in their homes, and (5) engendering public interest in the solution of the problem of cripples.

In the light of the State agency's activities in co-ordination, it is proper to evaluate the services of related agencies. Mention is made of the services of the North Carolina Orthopedic Hospital, where provisions are made for a large number of children of all races below the 16-year level. This hospital has continued its cooperation during the past 2-year period. It operates with a maximum capacity of 160 children and has inaugurated several additional services in order to give more complete care to the child in respect to adequacy and ultimate rehabilitation. Fifty beds are devoted to Negro children, and the hospital has continued to operate at full capacity, having served more than a thousand in-patient admissions for service. Hundreds still are on the waiting list. The hospital has made important progress in the expansion of isolation facilities, occupational services, and in the educational features of its services to crippled children.

The North Carolina League for Crippled Children,

functioning as a lay organization, has continued to cooperate; and, under a reorganization, has increased its effectiveness. This organization now has a full-time director, and during the 2-year period has more than doubled its resources for work with crippled children, resulting in considerably increased financing of extra needs of children not met by the State agency and financial support of local needs heretofore less adequately met. The services of the Vocational Rehabilitation Department have become an increasingly beneficial factor in the crippled children's program in North Carolina.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

At a recent meeting of the Executive Committee of the North Carolina Tuberculosis Association it was decided to have this year for the first time a State-Wide Seal Sale Chairman. The Executive Secretary was instructed to invite Mrs. J. Melville Broughton to serve in this capacity. Mrs. Broughton very graciously complied with this request.

* * * *

With the opening of the Eastern North Carolina Sanatorium at Wilson the number of beds in sanatoria throughout the state, exclusive of Oteen and private sanatoria, will be brought to 2,485, of which 1,429 are for white patients and 1,056 are for Negroes. Eastern North Carolina Sanatorium has 110 beds for whites and the same number for Negroes. Governor Broughton in his address at the dedication ceremony spoke with approval of the work being done by the Tuberculosis Association, saying that the policy for expanding funds is economically and financially beneficial to the state. The new sanatorium is architecturally beautiful and is equipped with the most up-to-date facilities for caring for patients. It will be under the same Board of Directors as the other two sanatoria. Dr. Paul P. McCain will be the General Superintendent, and Dr. Herman F. Eason, for several years Chief Clinic Physician of the Extension Department of the North Carolina Sanatorium, has been selected as Associate Superintendent and Medical Adviser.

* * * *

The Southern Tuberculosis Conference held in Memphis, Tennessee, on October 5, 6, and 7, was well attended in spite of the gasoline and tire rationing, and all its work both in the medical and the non-medical sections was based on methods and plans for "Control of Tuberculosis in War Time". Dr. M. D. Bonner, Jamestown, North Carolina, read a paper entitled "Bronchoscopy in Treatment of Tuberculosis" to the medical group. Frank W. Webster, North Carolina's Executive Secretary, presided over the non-medical section at one of the afternoon meetings. Others in attendance from North Carolina were Dr. H. L. Seay of Charlotte, and Mrs. May C. Nichols, Field Secretary.

It was decided to leave it to the discretion of the Executive Committee at a later meeting to decide if and when there will be a Conference meeting next year. Atlanta was selected as the place.

Officers elected for the ensuing year are: President, Dr. Victor F. Cullen, State Sanatorium, Maryland; Vice-President, Mr. Logan H. McLean, Executive Secretary of the Mississippi Tuberculosis Association. Mr. J. P. Kranz, Executive Secretary of the Tennessee Tuberculosis Association, will continue to serve as Secretary-Treasurer of the Conference.

Officers elected for the Southern Trudeau Society are: President, Dr. Horton Casparis, Head of the Medical Department of Vanderbilt University and Dr. Julius Wilson, New Orleans, Secretary.

FIFTH DISTRICT MEDICAL SOCIETY

About two hundred doctors attended the meeting of the Fifth District Medical Society held at Fort Bragg on October 1. The following program was presented at the scientific session, held in the afternoon:

- A Welcome to Guests—Brigadier General H. C. Coburn, Jr., M.C.
 - Atypical Pneumonia—Captain H. A. Grennan, M.C.
 - A Survey of Aviation Medicine—Captain Normal Spitzer, M.C.
 - Medical Service to Parachute Troops—Major N. B. Gall, M.C.
 - The Treatment of Burns — Major Norman W. Thiessen, M.C.
 - War Neuroses—Major Norman Q. Brill, M.C.
- A tour of the hospital followed the scientific meeting, and supper was served in the Mess Hall at 7 p.m. Dr. Donnell B. Cobb, Dr. Hubert B. Haywood, General Coburn, and Dr. R. D. McMillan made short talks at the dinner meeting. Dr. J. McN. Smith of Rowland was elected president and Dr. O. L. McFadyen of Fayetteville secretary for 1943.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society met in Asheville on October 8. The following program was presented at the afternoon meeting.

- Treatment of Certain Conditions of the Nasopharynx—McLean B. Leath, M.D., High Point
 - Sterility in the Male—Lacey Andrew, M.D., Winston-Salem
 - Chemical Warfare in Civilian Defense—George T. Harrell, Jr., M.D., Winston-Salem
 - Heart Failure—Certain Aspects of Diagnosis and Treatment—Edward S. Orgain, M.D., Durham
 - The Diagnosis and Management of Occupational Dermatoses—J. Lamar Callaway, M.D., Durham
- A dinner meeting was held at the First Methodist Church, with Dr. George W. Joyner of Asheville, President, presiding. Dr. Roscoe McMillan brought greetings from the State Medical Society, and Dr. Donnell B. Cobb of Goldsboro, President of the State Society, introduced the speaker, Dr. Thurman D. Kitchin, President of Wake Forest College. Dr. Kitchin's subject was "The Doctor".

Dr. F. C. Craven, of Asheville, presented Dr. C. C. Hubbard, of Farmer, with a pen and pencil set in honor of his being "Dean of Randolph Physicians." Dr. Hubbard, who has been practicing medicine for 55 years, is the oldest practicing physician, from the point of service, in Randolph.

At the business meeting which followed the scientific session the following officers were elected for the coming year: President, Dr. Robert L. McMillan, Winston-Salem; vice-president, Dr. W. H. Sprunt, Winston-Salem; secretary, Dr. George Harrell, Winston-Salem. It was decided that the next meeting will be held in Winston-Salem.

TENTH DISTRICT MEDICAL SOCIETY

The Tenth District Medical Society met at Hendersonville on October 22 at the Skyland Hotel. The guest speaker was Dr. Robert B. Lawson, Associate Professor of Pediatrics at the Bowman Gray School of Medicine of Wake Forest College, whose subject was "The Cause and Prevention of Hemorrhage in the Newly Born Infant". Dr. Paul McBee of Marion read a paper on the "Diagnosis and Treatment of Thyroid Disease"; Dr. LaBruce Ward of Asheville discussed "Convulsions in Children", and Dr. John Watkins of Asheville spoke on "Common Problems in Obstetrics".

BUNCOMBE COUNTY MEDICAL SOCIETY

Dr. W. N. Sisk, Buncombe County Health Officer, spoke on "The Use of Phenothiazine for Intestinal Parasites" at the October meeting of the Buncombe County Medical Society, held on October 19.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

The Third Annual Medical Meeting of the National Foundation for Infantile Paralysis will be held in New York City on December 3-4 inclusive.

AMERICAN COLLEGE OF SURGEONS CANCELS CLINICAL CONGRESS

The annual Clinical Congress of the American College of Surgeons which was scheduled to be held in Cleveland November 17-20, 1942, was cancelled by the Board of Regents of the College at a meeting held in Chicago, Wednesday morning, October 14. Motivated primarily by patriotism, the Regents were influenced by the present conditions surrounding the general war program which have led to a greater burden on the members of the surgical profession in their local communities as a result of the large proportion of the profession which is serving with the armed forces. The Regents by this action took cognizance of the desire of the profession to do nothing which would interfere with the successful prosecution of the war program such as would be caused by temporary absence of its members from civilian duties during the period of the Congress, embarrassment of the transportation system, and interference with the work of the local profession in Cleveland in preparations and presentations incident to such a meeting.

NEWS NOTE

The Ashe County Memorial Hospital at Jefferson ended its first year of operation on November 7, 1942. Dr. Dean Jones, resident physician, has had a successful year. A new respirator and cystoscope have recently been added to the hospital equipment. Dr. C. L. Haywood, Jr., of Elkin, has been named as consulting surgeon since Dr. Fred C. Hubbard of North Wilkesboro has joined the Army Medical Corps.

ERRATUM

The following corrections should be made in the article by Dr. H. D. Bruner, "A Review of Some Recent Advances in the Study of Factors in Hemolytic Reactions," which appeared in the May, 1942, issue of the Journal:

The last sentence in footnote 25 (p. 233) should read, "The chance occurrence of Rh-positive children would be 60.8 per cent of 13.03/84.6 per cent."

The sentence to which footnote 25 refers should read, "... the frequency of occurrence in all pregnancies of an Rh-positive fetus in an Rh-negative mother is calculated to be 9.36 per cent or 1 in 10.7^(25, 26)."

The rapid decline in tuberculosis mortality rates has been due mainly to lessening in the incidence of infection. Among those infected, the toll though diminished, is appalling. Mortality statistics, morbidity reports, autopsy examinations, tuberculin tests and x-ray surveys, indicate that about half of all infected individuals develop clinical tuberculosis, and that from 10 to 20 per cent of them eventually die of the disease. The high risk of disease and death due to infection by the tubercle bacillus justifies increased efforts for its prevention. Emil Bogen, M.D., Amer. Rev. of Tuber., August, 1940.

AUXILIARY

PUBLIC RELATIONS

The Public Relations Committees in national, state, and county auxiliaries are endeavoring in this year of crisis to put every energy into the war effort.

From the nine points of emphasis outlined for 1942 by Mrs. Frank Dwyer, National Chairman of Public Relations, the following seem most practical for North Carolina.

1. Promotion of health education among lay groups.
2. Promotion of nutrition programs giving *authentic* information.
3. Cooperation in all forms of National Defense.
4. Promotion of Nurses' Aides groups.
5. Practical assistance to the families of doctors in army centers.

Some one has said, "Casualties in war times are not only those who are killed in battle. Every skilled hand that is slowed by illness, every day lost on the assembly line by preventable illness is a gain for Hitler." What higher task can we set ourselves to than the promotion of health education?

Now, as never before, each individual citizen is asking how he or she can best serve in this total war, in which every man, woman and child in the United States is in some manner participating, willingly or unwillingly. The most complete answer is a simple one: Keep your health; maintain the health of your community; and, line upon line and precept upon precept, educate the people to save the doctors' time.

Mrs. Augustus S. Kech, in an address before the National Auxiliary in June, said about health education: "Who from the ranks of civilians can better render the service in this line than those of you who are so intimately connected with modern medicine, preventive and curative. You can strike the spark that lights the torch in every community in the nation . . . You can take the leadership in those communities to find the health needs and to assist in their solution. We have a real task before us and that is to educate the public in the best of modern public health. People are health hungry. They need authentic information, palatably served and digestible."

Closely tied up with health education is the effort to save the doctors' time. One of

the main objectives in a \$250,000 Keep Well Crusade recently launched by the Institute of Life Insurance is to impress upon the public the war time need for conserving the physician's time and strength. Today with one third of American physicians in the army, those who are left behind are already dangerously overworked. Let us by the press, radio and word of mouth impress upon the public ways in which they can make the doctors available to more people:

1. Call the doctor only when necessary. Go to his office when possible.
2. Help the doctor to plan his time by calling before 9 o'clock in the morning whenever possible.
3. Don't call your doctor on Sunday or on his afternoon off except for real emergencies. No one should be expected to work seven days a week.
4. Have an examination at the first sign of sickness; it may prevent a long and serious illness.
5. Go to the hospital when the doctor recommends it. He can see more patients there in less time.
6. Take courses in first aid, home nursing and Nurses' Aide training to help relieve the burden on trained personnel.
7. Be sure that your family is immunized against smallpox, diphtheria, whooping cough, typhoid fever, and tetanus.

Surely as doctors' wives we are vitally concerned, and will pledge ourselves and our auxiliaries to work untiringly in this Keep Well Campaign and Save Our Doctors Crusade.

Winthrop Chemical Company, Inc.

Appointment of Dr. Chester M. Suter, professor of organic chemistry at Northwestern University and chairman of its department of chemistry, as Director of Chemical Research of Winthrop Chemical Company, Inc. was announced recently by Dr. Theodore G. Klumpp, president. He assumes his new duties immediately at the company's research laboratories at Rensselaer, N. Y.

"Dr. Suter's appointment implements Winthrop's policy of fundamental pharmaceutical research here at home which was enunciated one year ago," according to Dr. Klumpp, "when the company's contracts with I. G. Farben were terminated and its dependence on the latter's research ended. During the past twelve months we have substantially expanded our research program so that we could make our own contributions to medical progress without dependence on others."

Dr. Suter is a member of the American Chemical Society and of the American Association for the Advancement of Science.

BOOK REVIEWS

Human Pathology. By Howard T. Karsner, M.D. Sixth edition. Price, \$10.00. 817 pages with 460 illustrations and 24 subjects in color on 16 plates. Philadelphia: J. B. Lippincott Co., 1942.

The sixth edition of this volume, which has long since established itself as one of the better texts on human pathology, requires little comment. The book has been reset, and the use of two columns to the page makes for easier reading. The subject matter has been revised; additions and subtractions have been made to the material contained in the previous edition so that it now conforms to the present status of our knowledge. Controversial matter is handled adequately. The excellent bibliography has been expanded. To those interested in a clear, concise, comprehensive, well arranged presentation of modern pathology, this book is recommended.

A Textbook of Gynecology. By Arthur Hale Curtis, M.D., Professor and Chairman of the Department of Obstetrics and Gynecology, Northwestern University Medical School; Chief of the Gynecological Service, Passavant Memorial Hospital, Chicago. Fourth Edition, Reset. Price, \$8.00. 723 pages with 401 illustrations. Philadelphia and London: W. B. Saunders Company, 1942

The new edition of Curtis' textbook contains all the better features of the previous editions and many notable and worthwhile improvements. The section on anatomy has been expanded and is thoroughly illustrated with beautiful drawings by Tom Jones. This chapter includes all the fine studies of the subperitoneal connective tissue and ligamentous supports of the viscera of the pelvis and urogenital diaphragm and of the vessels of nerves which Dr. Curtis and his associates have made in recent years.

Chapters which deal with the endocrines and endocrinopathic disturbance of genital function reflect a certain skepticism, and the author confines himself to proven facts. He exhibits little enthusiasm for current endocrine commercial preparations.

The arrangement of the book is excellent for the practitioner and student, and all of the common gynecological lesions are discussed in a thorough but concise manner. Dr. Curtis repeatedly emphasizes the importance of complete and incomplete stenosis of the cervical canal as a cause of clinical problems, and the necessity of passing a cervical sound in any complete gynecological examination, when the possibility of pregnancy has been eliminated. Much less emphasis has been placed on operative technique and operative procedures than in the previous edition.

The chapters on cancer of the uterus are excellent and deal with every phase of this problem in some detail. The author recognizes the operative treatment of cervical carcinoma in selected cases, differing in this from the accepted treatment with radium alone advocated by practically all the leading gynecologists.

This book is an excellent and complete textbook of gynecology for both the student and practitioner, and contains many suggestions which make it a great aid in the office practice of gynecology.

Osler's Principles and Practice of Medicine. Edited by Henry A. Christian, M. D., LL.D., Sc.D., Hon. F.R.C.P. (Can.), F.A.C.P., Hersey Professor of the Theory and Practice of Physic, Emeritus, Harvard University. Fourteenth edition. 1475 pages. Price, \$9.50. New York: D. Appleton-Century Company, 1942.

The publication of a new textbook of medicine, or a new edition of an old one, is always an event of interest. Such books are brief epitomes of the wisdom of the ages, where a single line often represents the arduous efforts of many minds. It is staggering to think of the tremendous labor which even the briefest of medical textbooks records. The path of the medical man must ever be from book to bedside and from bedside to book; from the accumulated experience of the centuries to the lessons learned by the study of the individual. Good, modern textbooks, monographs and journals are as indispensable as the stethoscope, microscope or scalpel.

When William Osler first published his *Textbook of Medicine* in 1892, it created a sensation which it is impossible for us of a younger generation to realize. From a mind trained by years of arduous and critical observation, and richly stored with reading, came a treatise on the science and art of medicine which shed such a clear and brilliant light upon a subject which badly needed a good house-cleaning that its publication marked an epoch and set a permanent standard for medical textbooks of the future.

Dr. Christian undertook some years ago to carry on the great tradition of Osler's textbook, and now he has just published his second edition of this classic. There is no clinician in America so well qualified as he to bring to a successful conclusion such a laborious undertaking. His long experience as a teacher, as the editor of *Oxford Medicine*, and as the author of many monographs, peculiarly fits him to wear the mantle of America's greatest clinical teacher. One expects from him a job well done, and his book fulfills our every expectation.

Since Osler's day the one-man textbook has been superseded somewhat in popular favor by textbooks written by many hands, each subject being treated by an author with special interest and training in the subject. This has resulted in brief monographic treatises, sometimes of uneven merit, and lacking the guidance of a unified viewpoint, such as a single author can contribute. On the other hand, it has been claimed that the advances of medicine have been so swift and specialized that they are beyond the powers of a single individual to know and report authoritatively. There is unquestionably something to be said for both views, and the final choice must of necessity be a matter of personal preference.

In such a brief review as this must be, one can only admire the general excellence of Dr. Christian's book. It represents the mature thought of a great clinician, and will prove a valuable addition to any library. One point alone illustrates the flexibility and balance of his mind. It is known to all experienced practitioners that fully one half of their patients have complaints involving the central nervous system. These may be primary, or secondary to some disease of other systems, taking the form of various neuroses. Such patients frequently are poorly understood and often badly treated; it is upon such medical errors that the quack and cultist thrive. Dr. Christian very rightly sets a new precedent for medical textbooks by putting such first things first, beginning his book with a discussion of the neuroses.

With this edition the book is fifty years of age. We hope it will continue to be a hardy perennial.

The Pharmacopoeia of the United States of America. Twelfth Revision (U.S.P. XII). Prepared by the Committee of Revision and published by the Board of Trustees. Easton, Pa.: Mack Printing Co., 1942.

This new revision of the U. S. Pharmacopoeia becomes official from November 1, 1942. It describes a total of 659 medicinal products, including 160 new drugs. Among the latter are ouabain, human measles and scarlet fever immune sera, surgical supplies, sulfanilamide, sulfathiazole and sulfapyridine, mersalyl, estradiol benzoate, neostigmine, and other basic medicines of greatest importance in clinical practice. The U. S. P. preparations are undoubtedly the most efficient forms for the administration of the basic drugs, and every physician should strive to utilize these preparations in his therapy. The best medical practice demands the use of a distinctive personal prescription. In order to attain this goal the Pharmacopoeia is invaluable, and every physician will profit greatly by having at his disposal this compendium, which serves as the legal standard for medicines in this country as well as in a number of the Central American Republics.

The Hand—Its Disabilities and Diseases. By Condict W. Cutler, Jr., M.D., F.A.C.S., Associate Surgeon, Roosevelt Hospital; Director of Surgery, Welfare Hospital; Consulting Surgeon, New York Dispensary; Chief, Emergency Medical Service, New York County; Fellow of the American Surgical Association. 572 pages with 274 illustrations. Price, \$7.50. Philadelphia and London: W. B. Saunders Company, 1942.

The author discusses the anatomy of the hand, acute, chronic and specific infections; various wounds of the hand, including burns, abrasions, fractures and dislocations; amputations; restoration of function; repair and reconstruction; deformities; tumors; and constitutional diseases of the hand. For his material the author leans quite heavily on other authorities, as is evidenced by the fact that 85 per cent of the 274 illustrations in the book are reproductions. The work covers a great deal of territory, and the reader is frequently referred to other works which discuss a given topic more deeply and at greater length than this book by its nature has been able to do.

Its value might be greatly enhanced by the wider use of line drawings and diagrams of hand anatomy, with greater emphasis on bone and joint structure. A few additions would also have proven useful—namely, discussion of the use of roentgen ray examinations in the diagnosis of gas bacillus infection; description of the use of tetanus toxoid; a fuller discussion of snake bites and their effects, with reference to types of wounds and types of snakes; some mention of the use of the Padgett dermatome; and, probably most important, a full discussion of the physiological basis, indications and contraindications for the use of heat and cold in treating disorders of the hand.

Its virtues lie in its orderly arrangement and in bringing together in one volume a great mass of material that heretofore has been more or less scattered.

Advances in Pediatrics, Volume I. Edited by Adolph G. DeSanctis, M.D. 306 pages. Price, \$4.50. New York: Interscience Publishers, Inc., 1942.

This volume is one of the most valuable additions to the recent pediatric literature which this reviewer has seen. It consists of a collection of short monographs written on the subjects in which the most important advances have been made during the past year or two. The following monographs are included: Toxoplasmosis, Virus Diseases, Chemotherapy, Electroencephalography, Vitamin K, Persistent Ductus Arteriosus and Its Surgical Treatment, The Premature Infant, Tuberculosis, and Endocrinology. Some other advances in pediatrics are discussed in short abstracts. This book presents an up-to-date review of subjects about which our concepts have been changing rapidly. The monographs are well written and complete, without being too long or over-burdened with references to unimportant contributions.

In summary, this volume can be most highly recommended to anyone interested in the care of children. If future editions are as well planned and well written as this first volume, this will be one of the most important additions to annual pediatric literature.

Glandular Physiology and Therapy. A Symposium Prepared Under the Auspices of the Council on Pharmacy and Chemistry of the American Medical Association. Pp. 571. Price, \$2.50. Chicago: American Medical Association, 1942.

This monograph consists of collected reprints of a series of articles published under the auspices of the Council on Pharmacy and Chemistry in the *Journal of the American Medical Association*. The papers give a summary of recent advances in the physiology of the endocrine organs. The material presented is, however, far beyond the reach and interest of the general practitioner, for whose guidance presumably the articles were intended. For example, the first 141 pages are devoted to a consideration of the hypophysis with sections on growth, somatic, metabolic, lactogenic and the other factors presumed to be elaborated by this gland. Few of these products are available for therapeutic use and their application clinically is still in the experimental stage. A chapter has been devoted to the so-called "anti-hormones", the physiological significance of which is questioned by many authorities in this field. Although this collection of articles will prove of interest to the endocrinological specialist, it is questionable that they will shed light on the problems facing the general practitioner or aid him in attaining a rational view of the subject of endocrinology.

How to Live in the Tropics. A Practical Handbook. By Virginia Hunt. 178 pages. Price, \$2.00. New York: Harcourt, Brace and Company, 1942.

The far-flung battlefields of the current war have created interest in areas of the world from the frozen Arctic to the torrid tropics, which no longer seem too far off to be of practical interest. The present book is intended to be a handbook of the practical problems of living in the tropics. It will prove useful to the emigrant or visitor to the tropics, for it includes many details of everyday life and health problems to be encountered in tropical climes.

Synopsis of Pathology. By W. A. D. Anderson, M.A., M.D., Assistant Professor of Pathology, St. Louis University School of Medicine. Price, \$6.00. 661 pages with 294 text illustrations and 17 color plates. St. Louis: The C. V. Mosby Company, 1942.

The author states in the preface that "this volume is intended to fill a gap which has existed between the very elementary manuals of pathology and the abundant excellent larger textbooks and reference works. By the presentation of pathology in a compact and condensed form, it is designed to be useful to the medical student, to the dental student studying general pathology, and to the clinician who must maintain familiarity with the foundation sciences of medical practice."

The subject is covered in a brief and dogmatic fashion, with only an occasional brief mention of controversial issues. This is the great problem of any synopsis, as the author admits in the preface. The text illustrations are used freely. Some represent excellent photographic work; others are poor.

The author has undertaken a difficult job and handled it well. However, this reviewer sees little reason for the book, in view of the numerous fine textbooks of pathology which are only slightly larger than this synopsis and which cover the subject matter adequately.

Synopsis of Ano-Rectal Disease. By Louis J. Hirshman, M.D. Second edition. Price, \$4.50. 315 pages. St. Louis: The C. V. Mosby Company, 1942.

This is a short, concise treatise on ano-rectal diseases. It is essentially a synopsis, as the title indicates, and will serve its most useful purpose as a reference manual for general practitioners of medicine.

Included among the many subjects discussed are anatomy (the essential facts); symptoms of particular importance; certain technical considerations; constipation; pruritis; fissures and fistulae; hemorrhoids; and, lastly, focal infections of ano-rectal origin, taken up in a brief chapter which is most interesting and timely.

This is, in general, a very excellent piece of work, and will serve admirably the general practitioner of medicine as a concise and practical book on ano-rectal diseases.

A Handbook of Allergy for Students and Practitioners. By Wyndham B. Blanton, M.A., M.D., Litt.D., Professor of Clinical Medicine and Chief of the Immunology Clinic, O.P.D., Medical College of Virginia, Richmond, Virginia. Price, \$3.00. 190 pages, illustrated. Springfield, Illinois: Charles C. Thomas, 1942.

Dr. Blanton has given us an excellent volume on allergy. It is neither too detailed nor too deep for the medical student, and is a ready volume for the busy practicing physician. It has been divided into three parts: Fundamentals of Allergy, The Causes of Allergy, and The Results of Allergy. It is condensed so that one is not dismayed at the time required to read or study this special subject. It is well written and should find a wide use in the classroom and in the hands of the physician.

THE SALVAGE STORY

by

PAUL C. CABOT

Deputy Chief

CONSERVATION DIVISION

WAR PRODUCTION BOARD

To move every pound of critically-needed waste materials into the flow for the manufacture of implements of war, is the over-all objective of the Salvage Branch of the Conservation Division, WPB. To make every man, woman and child in America conscious of this need, and to secure the active co-operation of every American to "get in all the scrap—NOW" is equally important.

The steel mills of America are doing a grand job to keep our war production on the schedule established by Donald Nelson. However, it was divulged at the Newspaper Editors' Meeting in Washington that there is an inadequate inventory of iron and steel scrap in the hands of consumers.

It has been determined that if our production schedule is to be maintained, 17,000,000 net tons of purchased iron and steel scrap are wanted in the second half of 1942 to give the iron and steel furnaces sufficient inventories to prevent shutdowns when the cold weather sets in.

The War Production Board, through its Salvage Branch, approaches this problem of "getting in the scrap" in four major directions: namely through—

1. The Industrial Salvage Section, which is charged with the responsibility of educating industry to salvage all critical waste materials, to speed up the return of these materials into the War Production stream and to help industry to use established channels of disposal.

The present immediate objective of the section is to urge and assist the executive management of every industrial establishment in the country to locate, classify and move into war production channels all dormant and production scrap in their possession as speedily as possible. "Dormant" scrap is defined as obsolete machinery, tools, equipment, dies, jigs, fixtures, etc., which are incapable of current or future use in the war production effort because they are broken, worn-out, irreparable, dismantled or in need of unavailable parts necessary to practical reemployment.

2. The General Salvage Section is charged with establishing salvage programs in local community areas, appointing local committees and directing their activities. Their salvage operation extends to every household including farms, all retail stores, garages, hotels, small businesses and the smaller industrial organizations in rural areas.

3. The Special Projects Salvage Section is responsible for salvaging large accumulations of secondary and waste materials that are tied up due to financial, legal, political, and other reasons and which cannot be quickly handled by other Sections in the normal course of operation. Special projects include such things as abandoned railroads, streetcar lines, factories, bridges, etc. Recently the Metals Reserve Company, at the request of the Conservation Division, set up an organization entitled War Materials, Inc. for the purpose of salvaging iron and steel scrap which cannot be topped within existing price ceilings. The War Materials, Inc. will work in cooperation with the Special Projects Section and it is expected that the tonnages of so-called marginal scrap will greatly expand as a result of this new organization.

4. The Automobile Graveyard Section, now working through 254 field representatives, has the re-

sponsibility to see that 20,000 graveyards in the United States are functioning as producing units. With the help of the steel industry, nearly all the regions in the country have been placed on a 60-day plan, which means that the dealers and brokers have been told that graveyards have been informed that they must break up and sell their inventory within the same period. It is essential to keep these graveyards as operating scrap producing units. Most people mistakenly believe that best results are obtained by the elimination of automobile graveyards. In view of the fact that anywhere from 1,000,000 to 2,500,000 cars annually come off the roads and enter graveyards, it is essential that they be kept in operation as an important continuing source of scrap metal supply. To keep these operations in existence it is as essential that they have an adequate inventory as it is that any other industry maintain a reasonable inventory.

Continuous Caudal Anesthesia in Obstetrics

A new method for continuous or fractional caudal anesthesia has been developed by Edwards and Hingson (Am. J. Surg., 57:459 (September), 1942). It appears to be remarkably effective and yet retains the complete cooperation of the patient. There has been uniform absence of delirium, narcosis, cyanosis, nausea, vomiting, and anoxemia, and no interference with uterine contractions. Every infant in the authors' series breathed spontaneously except one stillborn known to have been dead several days before delivery.

The technic consists in the injection of an initial dose of 30 cc. of 1½ percent solution of 'Metycaine' (Gamma-(2-methyl-piperidino)-propyl Benzoate Hydrochloride, Lilly) followed at thirty or forty minute intervals with 20 cc. of the 1½ percent solution. In every case there has been complete freedom of pain and discomfort of active labor within five minutes following the initial dose. Episiotomy and outlet forceps, and repair of the episiotomy has been without pain. The average duration of anesthesia has ranged from four and three-quarters to thirteen hours.

One patient described was having eclamptic convulsions when admitted, with blood pressure 220/110. After the initial dose of 'Metycaine' was given, the pressure declined to 140/90 and the clinical picture improved remarkably. The anesthetic was continued throughout the day without the blood pressure exceeding 150. She delivered a healthy baby spontaneously thirteen hours after the initial dose.

Agar and the War

The war has cut off importations of agar-agar, which normally come from Japan. The War Production Board has frozen all stocks of agar in order to protect the requirements for bacteriologic culture medium use of the Army, Navy and civilian hospitals and laboratories.

This W.P.B. control of agar stocks made it necessary for Mead Johnson & Company to discontinue the manufacture of "Pectin-Agar in Dextri-Maltose," a product which has been used by the medical profession for the treatment of diarrhea in infants.

Fortunately, Mead Johnson & Company have another product, Casec, which gives good results for the same purpose. Physicians who are not familiar with Casec are invited to write for samples and descriptive literature to Mead Johnson & Company, Evansville, Indiana.

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"PAY-YOUR-DOCTOR-WEEK"

Fifth annual "Pay-Your-Doctor-Week" was observed this year November 1 to 7. Inaugurated in 1938 by California Bank in Los Angeles, "Pay-Your-Doctor-Week" is now observed annually in scores of cities throughout the United States.

This year, however, the banks sponsoring "Pay-Your-Doctor-Week" suggested to the public that they should not only pay their doctors but also arrange to retire all outstanding debts and place themselves upon a cash basis at the earliest possible moment. In this the banks are supporting the contention of the administration that to get out of debt is a patriotic duty the people owe the country inasmuch as it will place them in a position to buy more war bonds and to care for the increasing tax load they will be asked to shoulder.

The original purpose of "Pay-Your-Doctor-Week" was to turn the publicity spotlight on the fairly widespread tendency to "let the doctor wait" until all other bills have been paid, and to pay tribute to the members of the healing profession who quietly but relentlessly continue the battle against disease, sickness and death, even now when the world seems bent on destroying itself.

This year, it is also pointed out that with many of the nation's doctors being called into the service of the country, those who remain behind will be expected to assume added burdens and added expense.

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PLEURAL REFLEX SYNCOPE AND AIR EMBOLISM IN ARTIFICIAL PNEUMOTHORAX

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BLACK MOUNTAIN

Riviere⁽¹⁾ has said, "Although pleural shock presents a series of symptoms which are generally indistinguishable from those caused by air embolism, there seems to be no doubt that it is a reality."

So-called pleural shock was first described in 1864 by Roger⁽²⁾. He described it as an "eclamptic fit," characterized by cardiorespiratory embarrassment, tonic and clonic contractions of muscles, loss of consciousness, and in some instances sudden death. He ascribed this symptom-complex to reflex nervous disturbances. Brauer, in 1912⁽³⁾, contended that this symptom complex was, in reality, due wholly to air embolism.

In making a review of the literature on this subject one is immediately impressed by the dearth of information in the English language. A review of thirty articles and references relative to pleural shock and air embolism, including eighty-nine case reports with some forty-three autopsies revealing bubbles of air in either the cerebral or the coronary vessels, shows that air embolism is being accepted as the cause of the above-mentioned symptom complex in the majority of the cases⁽³⁾.

Alexander⁽⁴⁾ states that "there is no explanation as to why pleural shock occurs in

one patient and not in another, or why it is more common at the initial injection of air than at refills. These matters, however, may be explained in cases of air embolism."

In my experience the few cases suspected of being pleural shock were all in the psychoneurotic type of individual. Ogden states bluntly that pleural shock is usually nervous or psychic in origin.

Symptoms

The symptoms have appeared as a rule with great suddenness at a moment when the needle is entering or leaving the pleural space⁽¹⁾. The nervous symptoms vary, according to the area of the brain or cord affected. In 1883, Forlanini outlined symptoms of pleural shock as follows:

1. Psychic—giddiness and loss of consciousness.
 2. Motor—tonic and occasionally clonic spasms, flaccid paralysis with contractions, hemiplegia or monoplegia. Never involuntary micturition, seldom vomiting.
 3. Circulatory and respiratory—rapid, weak, irregular pulse, pallor of skin,
3. (a) Jones, T. R., and Lockhart, J. A.: Air Embolism in Artificial Pneumothorax. *J.A.M.A.*, 117:2064-2069 (Dec. 13) 1941.
 - (b) Hamilton, C. E., and Rothstein, E.: Air Embolism. *J.A.M.A.*, 104:2226-2230 (June 22) 1935.
 - (c) Pollak, M.: Air Embolus, *Am. Rev. Tuberc.* 28:187-195 (August) 1933.
 - (d) Rukstina, G. J., and Lecomte, E. R.: Air in Coronary Arteries. *J.A.M.A.*, 91:1756-1779 (Dec. 8) 1928.
 - (e) Rukstina, G.: Experimental Air Embolism of Coronary Arteries. *J.A.M.A.*, 96:26-28 (Jan. 3) 1931.
 4. Alexander, John: The Collapse Therapy of Pulmonary Tuberculosis, Springfield, Illinois, Charles C. Thomas, 1937, p. 240.
 5. Footnote deleted in proof.

Read before the Tenth District Medical Society, Asheville, May 27, 1942.

1. Riviere, Clive: *Pneumothorax and Surgical Treatment of Pulmonary Tuberculosis*, London, Oxford University Press, 1927, p. 208.
2. (a) Cocke, C. H.: Pleural Shock, *Am. Rev. Tuberc.* 24: 345-357 (Nov.) 1931.
- (b) Cocke, C. H.: Pleural Shock, *Am. Rev. Tuberc.* 31: 404-412 (April) 1935.

cyanotic patches over the face, neck and thorax.

It is impossible to say which of these symptoms have been drawn from cases which were in reality embolic. Saugman sounds the warning that we must speak of pleural shock only when embolism can be excluded.

Case Reports

I wish to summarize briefly 5 cases presenting this symptom complex, 2 of which were possibly due to pleural shock and in 3 of which there was definite air embolism.

Case 1. Mrs. S., a white female, aged 27, was admitted with a history of previously induced artificial pneumothorax on the left with a 50 per cent collapse and multiple adhesions. She had had a left hemiplegia for eighteen days following the initial injection of pneumothorax. All manifestations of paresis had cleared at the time of admission. This is a clear cut case of air embolism involving the cerebral vessels.

Case 2. Mrs. L., a white female, aged 39, was admitted to the hospital with extensive bilateral pulmonary tuberculosis, more marked on the right. The patient was highly nervous. Pneumothorax was advised. She was exceedingly fearful and apprehensive of the advised treatment. The nervousness and apprehension persisted with each appearance in the operating room. The first three doses were introduced into the pleural space uneventfully. Subsequent fluoroscopy revealed a fairly free collapse of the lower half of the right lung, with dense multiple adhesions in the upper half. There were no fluoroscopically demonstrable pleuritic adhesions adjacent to the portal of entry of the pneumothorax needle. Upon the fourth refill, as soon as the novocain infiltration needle entered the pleura, the patient coughed, gasped several times, uttered a cry, complained of retrosternal anguish, took one long breath and said in a rapidly diminishing voice as she slumped forward, "I want to see my children before I die." She immediately went into syncope. Her color was blue-grey, and no respirations were discernible; the chest was motionless. There was no palpable pulse anywhere. The patient was unconscious, her pupils widely dilated. The heart action was too feeble to be heard either by the stethoscope or by placing the ear directly over the precordium. Rapidly increasing and enlarg-

ing blue splotches appeared over the chest, abdomen, face, and arms. Artificial respiration was begun immediately. Coramine and caffeine sodium benzoate were given intravenously. The heart sounds returned in ten minutes. After about twenty minutes the patient was entirely conscious. Repeated examinations thereafter revealed no evidences of paralysis or eye disturbances. This case, in my opinion, was possibly due to pleural shock. There was a suspicion of a coronary air embolism. It is significant that the patient had no memory of the accident.

Case 3. This patient was a psychoneurotic white female, 31 years of age. Upon the initial injection of air, anesthetization had been completed and the pneumothorax needle had been introduced through the chest wall to the pleura. As we were attempting to obtain a satisfactory oscillation of the manometer the patient turned pale, the pulse became accelerated and feeble, respiration became slow, and she slumped into unconsciousness for five to ten seconds. Ammonia inhalations were given and the patient returned to normal in a few minutes. Further attempts to introduce air were unsuccessful because of an adherent pleura. This case, in my opinion, was due to air embolism, the air coming from the tubing.

Case 4. This patient was a neurotic white male prisoner. Pneumothorax was begun and continued satisfactorily for several months. The patient was always fearful and apprehensive. Repeated fluoroscopic studies revealed a satisfactory collapse with a few scattered adhesions. On one occasion when the infiltration needle was passed through the pleura, the patient became pale, his pulse became accelerated, and he began to sweat profusely. He never became unconscious. Following ammonia inhalations the patient returned to normal in a few minutes. The refill of air was given without further incident. I believe that this case was due to shock.

Case 5. Mr. P., a male patient, had been taking pneumothorax for three months. The fluoroscope revealed multiple dense adhesions. While we were attempting to give a refill, the patient developed severe symptoms of air embolism and involvement of the coronary vessels. Respiration ceased temporarily. He had symptoms of heart block, with syncope and progressive restlessness. There was no immediate paralysis or localizing symptoms.

Several hours later he became semi-delirious and incontinent, and developed paralysis of the left leg and ptosis of the right upper eyelid. Paralysis of the left hand was delayed many hours and became more noticeable over a period of several days. Hemiplegia was finally complete. The mental symptoms cleared in a few days. A short while later the paralysis began to improve and completely disappeared. Pneumothorax was discontinued. This was an unquestionable case of air embolism.

The Mechanism of Pleural Shock

According to Miller^(6,2), the nerve supply of the pleura is as follows:

Parietal: intercostal, sympathetic and vagus.

Visceral: pulmonary plexuses originating in the vagus and sympathetic nerves.

Pericardial: two branches of the vagus from the pulmonary plexus.

Diaphragmatic: motor and sensory fibers from the phrenic. (Cavalie states that the last six intercostal nerves penetrate 1 to 2 cm. into the margin of the diaphragm and supply some sensory fibers.)

Meakins^(2,7) feels that pleural shock may be a reflex between the pleura and the pulmonary circulation, resulting in a spasm of the finer pulmonary vessels, with a rapid rise of the pressure of this circulation causing a great decrease in the volume of blood reaching the left heart.

Sir Thomas Lewis⁽²⁾ explains pleural shock as possibly vasovagal in origin and attributes the loss of consciousness to vasodilatation. He suggests a reflex disturbance of the central nervous mechanism, set in motion by stimulation of either the carotid sinus or the depressor nerve, as the causative factor.

Weiss⁽²⁾ states that not only carotid sinus reflex, but also vasovagal reflexes can induce sino-audicular rhythms, ventricular standstills, and complete block. He states further: "There is no reason why at times afferent impulses from the pleura cannot set up such a reflex."

Cocke^(2,8) suggests increased intrapulmonary pressure or pull on an inflamed pleura

as the exciting cause. He concludes by stating: "I presume to offer, as an explanation of pleural reflex syncope, that it is a condition produced by reflex activity from injury or insult to an inflamed pleura in unknown and uncommon states, similar in many respects to the vasovagal attacks of syncope."

The Mechanism of Air Embolism

Brandes⁽⁹⁾, in 1912, in attempting to outline an empyema cavity with bismuth paste, accidentally demonstrated the mechanism of air embolism. Following the injection the patient became unconscious and was suddenly seized with fatal convulsions. At necropsy, bismuth was found in the cerebral vessels and brain stem.

There are certain prerequisites to air embolization in artificial pneumothorax.

1. A diseased lung or pleura⁽⁷⁾. A normal lung tends to be forced away from the parietal pleura by the needle, and the vessels tend to collapse or retract when punctured. The diseased areas of a lung hold the vessels stationary, preventing their retraction and collapse and permitting perforation by the needle.
2. Partial obstruction of a bronchus. Anderson⁽¹⁰⁾ states that the pulmonary venous pressure, on inspiration, is less than atmospheric pressure; when a bronchus is partially obstructed by a tuberculous process, this negative pressure is greatly increased, thus making it relatively easy for air emboli to result from introducing the pneumothorax needle into a pulmonary vein.

Mechanism of the Entrance of Air^(11,9b,1)

- A. Air may pass directly from the needle to a pulmonary vein or to an engorged vessel of the diseased pleura.
- B. Air may pass into a transfixed vessel of the pleura after withdrawal of the needle, fibrosis in and around the vessel preventing contraction.
- C. Rupture of a vessel of an alveolus may open a communication between the alveolus and the vein.

6. Miller, Wm. S.: *The Lung*, Baltimore, Charles C. Thomas, 1940.

7. Hamilton, W. F.: *Pleural Shock*, Canad. M. A. J. 33:370-374 (Oct.) 1935.

8. Capps, J. A., and Lewis, D. D.: Observations Upon Certain Blood Pressure-Lowering Reflexes That Arise from Irritation of the Inflamed Pleura, *Am. J. M. Sc.* 134:868-894, 1907.

9. (a) Stivelman, B. P.: *Pleuro-Pulmonary Reflex*, *Am. J. M. Sc.* 165:836-846 (June) 1923.

(b) Durant, T. M.: The Occurrence of Coronary Air Embolism in Artificial Pneumothorax, *Ann. Int. Med.* 8: 1625-1632 (June) 1935.

10. Anderson, D. L.: *Air Embolism and Pleural Shock*, *Virginia M. Monthly* 63:371-375 (Sept.) 1936.

11. Canizares, Miguel, and Santiago, Govino: *Air Embolism in Artificial Pneumothorax Therapy*, *Bull. Quezon Institute, Manila Philippines*, July, 1941.

D. Air may be aspirated from the pleural space, particularly in the presence of a positive pressure.

E. Rarely, air may be sucked from a cavity during hard coughing.

Concerning the controversial question of the involved area of embolization¹², a review of the literature places emphasis on the obstruction of the cerebral vessels as the cause of death. Recent studies by Durant, Rukstinat, and LeCount indicate that air in the coronary arteries plays an important role in the fatal outcome.

Durant^{12a} reports a case of sudden circulatory collapse during an attempt to induce pneumothorax. An electrocardiogram taken within three hours of the onset showed alterations in both the initial and the final ventricular complex indicative of infarction of the anterior walls of the heart. Subsequent electrocardiograms taken at intervals over a period of one year showed a gradual reversion to the form of curve observed before the accident. Thrombosis and solid emboli were ruled out.

Air entering pulmonary veins does in part reach the coronary circulation^{13,3e}, and that such air does produce serious cardiac disturbances and even death is proven by the excellent experimental work of Rukstinat. Rukstinat and LeCount^{3d,3e}, working with guinea pigs, produced broncho-venous fistulas by raising the intratracheal pressure sufficiently high to rupture alveoli into adjacent blood vessels. Convulsions were invariably produced when the pressure was raised to 30 mm. of mercury. Necropsy carried out under water revealed air in the coronary arteries of all the animals. There was 50 to 90 per cent filling of the coronary channels with air. More recently Ruksti-

nat^{3d,3e} reported extensive work on the rapid injection of air into the coronary arteries of dogs. Such injection was immediately followed by tumultuous heart action and acceleration, followed within ten to twelve seconds by pronounced slowing of the heart rate. Death occurred in one to four minutes. Air injected slowly in amounts up to 20 cc. caused only temporary cardiac disturbances. He concludes that obstruction of the coronary arteries must be considered of great importance in all cases of air embolism originating in the pulmonary circulation.

Clinical reports of coronary air embolism are few in number, possibly because the interest of the observer has been centered on the cerebral manifestations.

Weaver^{3a} produced symptoms of air embolism by injecting as little as 1 cc. of air into the carotid artery. Norland^{3a} injected 160 cc. or more into the peripheral system, before clinical signs of embolization were apparent. In intravenous medication bubbles of air may enter the peripheral vein with no untoward effect. They are absorbed by the vascular lung tissue.

Curtillet^{3a}, with animal experimentation, has shown that air bubbles do not reach vessels of a caliber of less than 30 microns; they never reach capillaries. Arrested in the end-arterioles of 30-40 microns in diameter, the bubbles are rapidly absorbed.

Jones and Lockhart^{3a} state: "Air bubbles injected into the peripheral circulation, barring such anatomic defects as a patent foramen ovale or a ductus arteriosus, are completely filtered out in the vascular system of the lungs and are never found in the vulnerable arterial circulation." Over a period of eighty-seven hours 3,910 cc. of air was injected slowly into a dog before death occurred. A fatal dose for a 150 pound man would be about 525 cc. of air injected rapidly into the peripheral circulation. The lethal dose of air entering by way of the pulmonary vein into the arterial circulation of a 150 pound man is about 37.5 cc. The amount depends on how rapidly air emboli obstruct vital cerebral and coronary arteries.

Where there are massive pleural adhesions indicative of sustained pathology, anastomoses of the greater and lesser (pulmonary) circulation often form. Air thus entering the pulmonary vein goes to the left heart and thence to the aorta and to the coronary and cerebral blood vessels. This accident

12. (a) Domrich, H.: On the Increase of Fatal Pulmonary Emboli, *Deutsche Ztschr. f. Chir.* 222:20-29, 1939.
- (b) Descomps, H.: Undoubted Gaseous Embolism During the Course of Emphysema of a Pneumothorax, *Spontaneous Cure, Rev. de la tuberc.* 13:616-623 (June) 1932.
- (c) Capurani, G. F.: Unusual Mechanism of Production of Gaseous Embolism in Artificial Pneumothorax, *Riv. di pat. e clin. d. tuberc.* 13:77-89 (May) 1939.
- (d) Bruns, E. H.: Air Embolism as a Complication in Artificial Pneumothorax Therapy, *Colorado Med.* 27: 237-245 (July) 1930.
- (e) Rumberg, N.: Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis (Three Cases of Air Embolism), *M. J. and P.* 138:270-275 (Oct. 18) 1933.
- (f) Laignel, Lavastine, Miget, A., and Odinet, Jacques: Another Case of Pleural Hemiplegia, *Bull. et Mem. Soc. med. d. hop. de Paris* 18: 352-356 (March 14) 1932.
- (g) Wittich, F. W.: Air Embolism Following Attempted Pneumothorax, *Journal Lancet* 50:508-509 (Oct. 13) 1930.
- (h) Kilduffe, R. A.: Embolism and Infarction, in *The Cyclopaedia of Medicine, Surgery, and Specialties*, Philadelphia, F. A. Davis, Vol. 5, p. 177.
13. Richmond, H. F.; Coles, B. C.; and Hall, G. E.: Experimental Gas Embolism, *Canad. M. A. J.* 36:581-588 (June) 1937.

happens when the needle is in the lung tissue or in a thick adhesion; never when it is in a free pleural space with unquestionable free oscillation of the monometer.

Riviere⁽¹⁾ contends that the entry of air into a pulmonary vein depends upon the negative intravenous pressure, a force which is maintained both by the suction power of the thorax and, to a lesser extent, by that of the heart.

Maendel^(3c) records a case in which autopsy revealed a pulmonary vein still open in an adhesion which had been invisible in the roentgenogram. McCurdy⁽¹⁴⁾ presents a similar case, with autopsy revealing the needle tract that extended into a pulmonary vein surrounded by dense adhesions.

Incidence

When we consider the large number of refills given daily, we wonder why shock and embolic accidents are not more frequent. Lung tissue as well as inflamed pleura *must* be punctured often, because it is not uncommon for patients to have blood streaked sputum and to complain of tasting novocain following unsuccessful attempts to find a free pleura. Two years ago a patient was admitted to the Sanatorium with a history of having had injections of 500 cc. of air each week for thirteen weeks. X-ray studies and subsequent attempts to find a free pleura revealed no evidences of any compression; the lung was completely adherent. The air was simply traversing the tracheobronchial tree and the patient felt no untoward effects.

The consensus of opinion is that the symptom syndrome herein discussed appears more frequently at the induction of pneumothorax.

In 229,000 refills in different sanatoria in Switzerland, Frommel and Demole^(11,2) found 69 accidents—a ratio of 1:5,000. Of these, 6 were fatal. Fifty-two per cent occurred before insufflation and 19 per cent after insufflation. Less than one-third were not accompanied by localized nervous symptoms. Two-thirds had such disturbances as paralysis, monoplegia, hemiplegia, and aphasia with or without epileptiform crisis or blindness. In the majority of cases symptoms lasted only a few minutes. Forlanini^(11,11) had 12 accidents in 10,000 punctures. Anderson⁽¹⁰⁾ had 2 accidents in more than 36,000 refills, with

1 death. Matson⁽¹⁵⁾ had 2 deaths and 4 accidents in 20,000 refills. Canizares⁽¹¹⁾ of the Quezon Institute of Manila reports 9 accidents with 1 fatality in 194,332 refills. Hamilton⁽⁷⁾ had 124 accidents with 12 fatalities out of 47,992 punctures. Boroch and Widre had 12 accidents and no fatalities in 13,935 punctures. Sachs had 22 cases in 1,122 patients. Pollak^(3c) reported 3 serious cases, 2 fatal, one of which was proven to be coronary embolization at necropsy. Bruns^(12d) had 13 cases of air emboli with 4 deaths in 12,700 refills; all had pleural adhesions. Cocke and Crow⁽²⁾ had 4 accidents, 2 minor, 1 moderate, 1 major, in 8,000 punctures. Andrews had 2 in 8,000 punctures, with 1 death. Hamilton and Rothstein^(3b) reported 9 cases, 2 of which were fatal. Anderson⁽¹⁰⁾ stated that one could expect the accident in the ratio of 1:2,000 refills, with a fatality rate ranging from 15 to 50 per cent. This is rather high. In my own experience, out of more than 27,000 punctures, including refills and unsuccessful attempts, I have had 4 accidents—1 serious, 1 moderate, and 2 mild with no deaths. This is a ratio of 1:6,750 punctures.

J. Arthur Myers⁽¹⁶⁾ has a solution: "We believe that the only way to prevent these occasional accidents is to institute artificial pneumothorax while the disease is minimal and before adhesions have formed in any considerable number." It would seem that he is sadly neglecting bed rest.

Differential Diagnosis

In the review of the literature one is impressed with the absence of concrete evidence proving the existence of pleural shock⁽¹⁷⁾; however, there are many cases we would classify as such. I feel that pleural shock unquestionably does occur. One example is the patient with tuberculous empyema (of which I have had several), whose chest has to be repeatedly aspirated and who goes into mild shock upon irritation of the visceral pleura. Pleural shock has been observed in oleothorax with the use of highly concentrated gomenol⁽¹⁸⁾. It is seen in pleural

14. McCurdy, T.: Air Embolism Complicating Artificial Pneumothorax, *Am. Rev. Tuberc.* 30:89-91 (July) 1934.

15. Matson, R. C.: Surgical Treatment of Pulmonary Tuberculosis, in *The Cyclopedia of Medicine, Surgery, and Specialties*, Philadelphia, F. A. Davis, 1938, vol. 15, p. 321.
16. Myers, J. A.; Levine, Ida; and Leggett, E. A.: Air Embolism and Spontaneous Pneumothorax Complicating Artificial Pneumothorax, *Brit. J. Tuberc.* 31:77-92 (April) 1937.
17. (a) Hartley, G. S., and Yorkoff, F. H.: Air Embolism or Pleural Shock, *Virginia M. Monthly*, 65:234-236 (April) 1938.
(b) Martin, B.: The Prevention of Fatal Lung Embolism, *Zentralbl. f. Chir.* 57:1411-1412 (June 7) 1930.
18. Capps, J. A.: Air Embolism Versus Pleural Reflex as the Cause of Pleural Shock, *J.A.M.A.* 109:852-854 (Sept. 11) 1937.

exploration, pleural tap, and simple pleural lavage. Forlanini states that an angiomatous parietal pleura resulting from previous inflammation may be responsible for pleural shock. Cocke⁽²⁾ states that the features of the syndrome have been noted in pulmonary operations, exploratory and aspiratory punctures, pleural lavage, and at the beginning of, during, and following pneumothorax.

Oliver and Turries⁽¹⁴⁾, Kindberg, Cocke, McKnight, Gammons, and Knowles reported cases in which the symptoms were attributed to pleural shock.

Schlaefter supports Brauer's belief^(15,19) that the symptom-complex is the result of air embolism. He states that experimentally there is no pleural reflex which explains these complications. The pathological condition of the lung and pleural sheaths is the same in all cases: local damage to fixed and distended vessels, so located as to permit aspiration from a larger pulmonary vein under negative pressure. Air emboli have been demonstrated in the eye grounds, and many times in the cerebral and coronary vessels at necropsy. Norris and Landis⁽²⁰⁾ feel that these accidents, particularly those with paralysis of the cerebral type, are due to air embolism.

Bruns^(12b) states that no comparison of statistics can be made, because of the difficulty of separating cases of pleural shock from those of air embolism.

Conclusion

Many of these accidents in the pneumothorax procedures may be avoided by proper choice of cases, by proper examination, by careful study of the roentgenograms, by the use of the proper instruments, and especially by careful manometric readings. An optimistic, congenial atmosphere should prevail during the operation, particularly in the initial pneumothorax.

One has to witness one of these dramatic and terrifying accidents to realize how quickly dissolution can result from such a simple and generally harmless procedure.

19. (a) Beyer, H. L., and Peterson, F. R.: Empyema of Pyogenic Origin, in *The Encyclopedia of Medicine, Surgery, and Specialties*, Philadelphia, F. A. Davis, 1938, vol. 11, p. 815.

(b) Schmidt, O.: Air Conditions in the Circulation in Cases of Blunt Trauma of the Thorax, *Deutsche Ztschr. f. d. ges. gericht. Med.* 13:171-180 (April 8) 1930.

20. Norris, G. W., and Landis, H.: *Diseases of the Chest and the Principles of Physical Diagnosis*, ed. 6, Philadelphia, W. B. Saunders, 1938, p. 311.

EARLY DIAGNOSIS OF SHOCK

CHAUNCEY L. ROYSTER, M. D.

RALEIGH

It has been aptly said that "Cardinal symptoms are often terminal events." The stage of development in which we usually recognize the condition which we term shock is an excellent example of this. On the other hand, because of their readily reversible character, recognition of its early manifestations furnishes an opportunity for utilizing to advantage the newer methods of treatment. It is more important to detect the earliest signs of shock than to know the advantages and disadvantages of various means available for combatting it. It is also as important to concede that a cold, clammy skin; rapid, thready pulse; low or absent blood pressure; and ashen pallor are not signs of shock, but of impending death; for these findings indicate that the condition is approaching or has reached the point of becoming irreversible.

The Mechanism of Shock

There are many theories as to the causes of shock, none of which fit all cases and none of which, to date, can be unequivocally proven. In the final analysis, however, it matters not whether one is a devotee of Moon, a disciple of Scudder, or a follower of Blalock. Whatever the original mechanism, the common denominator of all theories of the production of shock and all systems of treatment is a decrease in blood volume in relation to the total capacity of the circulatory bed. The existence of this state of affairs can be determined by simple, rapidly performed procedures. In order to realize the importance of this occurrence in relation to the development of full blown shock, let us review our time table on a physiologic level which will eliminate as far as possible futile controversial discussion.

The development of shock can be represented as a series of progressive integrated steps—a vicious, self-perpetuating circle if not properly handled, but one in which the mechanism of compensation and recovery is present if the natural machinery available for this purpose has not been wrecked and if aid is begun soon enough.

Whatever the remote factors involved,

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whether they be hemorrhage, loss of plasma, burned tissue, severe diarrhea, local transudation of plasma in areas of damaged tissues, or primary damage to capillary endothelium and loss of plasma intercellularly, the peripheral circulatory deficiency which manifests itself as shock results from a disparity between circulating blood volume and the volume capacity of the vascular system. If the cause of diminution of blood volume is loss of fluid alone, the body usually is capable of handling the situation. Thus excessive perspiration, vomiting, and purging cause no alteration of blood volume or of its concentration. Even the loss of as much as 1000 cc. of blood by a healthy donor is quickly adjusted by this remarkable priorities board.

The compensatory mechanism set in motion by fluid loss is dual in nature. One element is essentially a physio-mechanical process and consists chiefly of arteriolar constriction. The capillaries and veins also share in this process, and together they reduce the space in which the lessened amount of blood is contained, and by so doing allow the maintenance of sufficient intravascular pressure to carry on the work of the circulation. The other mechanism depends upon the ability of the capillaries to transfer fluid between the blood and the intercellular spaces. As long as the capillary semi-permeable membrane is intact, the tendency toward decrease in blood volume or increase in the concentration of solid elements of the blood is met by transfer of fluid from the tissues into the vascular space. In other words, an auto-infusion is accomplished and restoration of the blood to its normal volume and its normal corpuscular-fluid relationship results.

Unfortunately, there is a limit to the potentialities of this system. Continued operation of the factors causing fluid loss depletes the stores of sodium in the interstitial spaces, and the delicate balance between the predominance of sodium outside the body cells and the predominant potassium within them is upset. In developing shock the two ions may effect a startling reversal. The potassium becomes the dominant base outside the cells, and exerts a deleterious effect on them all, the capillary endothelial cells among others.

The developments thus far are usually reversible and are especially amenable to treatment. In simple, uncomplicated hemorrhage,

unless it is sufficiently large to produce tissue anoxia and resultant capillary endothelial damage, the patient responds well to the introduction of any type of fluid, whether whole blood, saline or plasma. The normal or artificial compensation results in hemodilution in this case.

Unfortunately hemorrhage is seldom present without other factors which disturb or actually wreck the function of the capillary semi-permeable membrane, producing a more ominous situation. Those factors include any type of tissue injury, severe infections, chemical substances, and many others. Disturbance or destruction of the capillary function as a semi-permeable membrane not only deprives it of its function of adjusting the blood volume to the capacity of the vascular bed, but allows the escape from the blood stream of ionic elements and, more important, of the actual plasma with its proteins, so valuable in maintaining the osmotic pressure of the blood. The resultant increase of the corpuscular elements at the expense of the fluid element of the blood is known as hemoconcentration. This is the earliest practicably measured change which occurs in shock.

If unchecked, the process now becomes more rapid. With further loss of plasma through the damaged capillaries there is more diminution of blood volume. The capillaries being unable to restore the blood volume by passing fluid into the blood stream, there is further hemoconcentration. The vascular system becomes more constricted to maintain the blood pressure, and even at this stage the blood pressure may be normal or elevated. The process is still reversible, providing that the causative factor is not too overwhelming or too persistent in its action. The intravenous introduction of plasma or whole blood at this point will usually save the patient, even though these elements are often lost through the damaged capillary walls.

With excessive amounts of fluid loss and vascular damage a point is reached when further vascular constriction is no longer possible and when the limit of reduction of vascular capacity is reached; any further reduction in blood volume causes a drop in blood pressure, indicative of a real break in peripheral compensation. The reduced circulatory pressure results in tissue anoxia, and tissue anoxia causes further demand on the capillaries for dilatation and perme-

ability, here a perversion of a normal physiologic process. This results in more loss of fluid and more hemoconcentration. To wait for a fall in blood pressure before becoming aware of the presence of shock is like waiting for general peritonitis before making the diagnosis of appendicitis. Chances of recovery at this point are generally diminished, and if recovery does occur it is after unnecessary risk to the patient and much unnecessary labor and worry on the part of the physician.

The Importance of Hemoconcentration in Evaluating Shock

It is evident, then, that hemoconcentration appears far sooner than any measurable fall in blood pressure. Actually it occurs anywhere from several hours to a day or so before the blood pressure or pulse rate changes. It indicates that there has been sufficient capillary endothelial damage to cause a loss of plasma and diminution of blood volume sufficient to produce shock. Increasing hemoconcentration means the progression of shock and is a warning that treatment is inadequate. Conversely, a decreasing hemoconcentration tells us that either natural mechanisms or treatment is affecting the situation favorably. Frequently there is no alteration in blood pressure or pulse rate, and the patient's condition can be evaluated only by following the fluctuations in the fluid-corpuscular relationships of the blood.

As long ago as World War I it was noted that patients in whom arterial red cell counts were much higher than those of the venous blood developed shock, and that the mortality rate was in direct proportion to the degree of the disparity.

Here, then, is a very simple method of determining early shock which can be performed in nearly any circumstances that would allow the determination of the blood pressure. It certainly takes no more time than it does to make a leukocyte count, which is almost as much a preoperative requisite as is an anesthetic. In many instances the red cell count will yield much more valuable information.

The Hematocrit Reading

Another method of arriving at the same conclusion is by the determination of the hematocrit, as this reading roughly parallels that of the red cell count in persons not sub-

ject to certain types of anemia or polycythemia. This procedure, of course, requires centrifuging the blood and takes more time than the cell count, but any well equipped laboratory can perform it.

The Densimeter

Intelligent use of saline, whole blood, or plasma demands that estimation of the plasma proteins also be made. This is most often done by the falling drop machine or densimeter. Whole blood or plasma may be used with equal facility. The time required for a drop of the fluid used to fall a measured distance through a fluid with which it is non-miscible is compared with that required for a drop of fluid of known specific gravity. Simple arithmetic then gives the specific gravity of blood or plasma. From a simple table of values the total protein content of the blood may be read within very close limits. The whole operation need take only two or three minutes and is simpler than a red or white blood cell count. The advantage of this apparatus is that in one operation the density of the blood is determined and a quantitative estimate of the type of fluid necessary is obtained. The density of the blood is proportional to the amount of solid elements it contains, and therefore this is another direct indicator of the degree of hemoconcentration or hemodilution. Two or more determinations by any one or all three of these methods allow us to determine whether or not the alterations of the various blood and tissue fluid components are progressing in the direction of normality; whether or not therapy is indicated; and if so, to what degree.

The Use of the Hemoconcentration Test in the Treatment of Shock

Naturally, the patient who is in what we now recognize as the late stage of shock when he is first seen needs intravenous fluids immediately. If plasma is available it can be immediately utilized, and one need not spend time in determining the degree of hemoconcentration at that moment. The amount of plasma necessary to combat shock, however, may vary from 250 to 2,000 cc., and when the immediate danger is passed the necessity for additional fluid can be determined by the subsequent changes in the degree of hemoconcentration.

I call to mind two recent cases of shock in

which the importance of these tests was brought out. In one there was discovered accidentally before operation a hemoglobin of 150 per cent and a red blood cell count of 8,000,000. Postoperative shock was terrific and required every available means of therapy to combat it. The second patient was admitted to the emergency room pulseless and without blood pressure, following an accident. Plasma in large amounts restored the blood pressure and pulse to normal. Eight hours later the signs of late shock suddenly recurred and the whole process had to be repeated. I believe that this relapse could have been prevented had two or three investigations of the status of the blood been made after the emergency had been dealt with.

Conclusion

Two essential points should again be stressed. First, blood pressure and pulse determinations are inadequate to determine the presence of shock, and if changes of this nature have occurred shock has already progressed beyond the point of easy reversibility. Second, the treatment of shock in any stage can be followed accurately by employing the several means of evaluating hemocoagulation or hemodilution. One or another means of detecting and interpreting the early signs of shock are within the reach of all. It behooves us to make adequate use of them.

Abstract of Discussion

Dr. Verne S. Caviness (Raleigh): This is an excellent paper and has been well presented. It covers one of the most important problems with which we are faced at the present time. We are aware of the tendency among some of our confreres to blame death following a surgical operation on heart failure or an act of God. Those of us who have studied the subject, I think, are pretty well convinced that this is extremely rare.

The red blood cell count is such a simple method of making a scientific study of any case of shock or threatened shock that it seems foolish to continue to rely on blood pressure determination alone.

The densimeter, to determine whether saline, whole blood, or serum is indicated, may help to stop some of the indiscriminate use of glucose. I may be prejudiced, but I think that the use of glucose intravenously, unless it is buffered by insulin, is never justified.

Dr. Walter R. Johnson (Asheville): I would like to stress one point in Dr. Royster's excellent paper, and that is the irreversibility of this process after the obvious signs of shock are present—that is, cold, clammy skin, rapid, thready pulse, and falling blood pressure. If you wait until these signs are present

and allow that situation to obtain for any number of hours, then no matter what you do, the patient is very apt to die.

Dr. G. F. Parker (Asheville): I want to add a word about plasma. In Asheville we have had established for about a year a blood plasma bank which serves our civilian population. We have made available to all five hospitals in Asheville a large number of bottles of plasma, which is held ready in the hospitals. We have arranged for outlying communities to send in citrated blood, drawn in standard bottles. This is processed in our laboratory and sent back for a minimum charge to be stored and held available.

Dr. John Elliott of Salisbury, who has done a good deal of work on this, says that plasma can be stored at room temperature and kept in your office or carried in your bags.

Charlotte also has a plasma bank, and I am sure that some of the other communities will establish such banks. I would urge everyone to make himself familiar with the use of plasma and to have some available.

Dr. R. A. Moore (Winston-Salem): I would like to present a thought on the prevention of shock as well as the cure of it. I am interested in traumatic surgery. We can do much in most cases to prevent the late shock that is so difficult to overcome by putting at rest as soon as possible any traumatized area. If you do not immobilize a simple fracture as soon as possible it will gradually produce, either reflexly or through tissue injury, an increase in the amount of shock. In the compound fracture with hemorrhage we must first combat the hemorrhage, and clean up the tissue, and then immobilize the part.

If we do not immobilize fractures of the hip in older people ultimately they will go into, not the ordinary type of shock, but a condition from which death results in a comparatively short time. We should handle these cases carefully and immobilize the part as soon as possible. We hesitate to use plaster casts, but in most cases we can pin those fractures, and the patient will come out of shock and feel very much better. We have to consider continued irritation of the tissues in handling late shock.

Dr. Royster: I thank all of you gentlemen very much. Because of the lack of time I tried to avoid as much as possible discussion of the actual treatment of shock in various conditions. That is almost an endless discussion.

I do wish to thank particularly Dr. Moore for bringing out the importance of continued damage to tissues in the underlying mechanism of shock. That is probably what leads to irreparable damage to the capillary mechanisms.

Geriatrics—The vast majority of older persons would be happier pursuing some gainful occupation, and maintaining thereby their self-respect and dignity. There is a great disproportion between chronologic and physiologic age about which more should be known. Certainly a program for aged persons, preventing the indignities and deprivations of neglect, guarding against exploitation, and yet giving them an opportunity for a full, satisfying life commensurate with their abilities, needs the medical profession badly. The beginning of a specialty of geriatrics augurs well for the future.—A. Warren Stearns: *The Role of the Physician in a Competitive Society*, New England J. Med. 224:886 (May 22) 1941.

TREATMENT OF CHRONIC ALCOHOLISM

M. A. GRIFFIN, M. D.

ASHEVILLE

It is only within recent years that the light of modern science has been focused on alcohol and alcoholism with sufficient intensity to penetrate the enveloping fog of traditional error. Nowhere in medicine is the survival of archaic thinking more apparent than in theories concerning alcoholism and its treatment. Not much optimism prevails among therapists relative to permanent recovery from alcohol addiction, but there are a few exceptions. Therapists generally agree on the difficulties and the limited applicability of all methods. There is no "guaranteed" or easy cure for alcohol addiction. We know of no specific, specialized form of treatment for chronic alcoholism which can be wholeheartedly recommended.

A basic difficulty has been pointed out by Hart, who said that alcohol addiction cannot be regarded as a disease which runs its course and from which the patient is glad to recover. Another fundamental difficulty has been indicated by Kunkel, who stated that in the treatment of alcohol addiction the whole person must be changed. This statement is profoundly true, and all treatment which does not have as its goal a change of the total personality must necessarily be either approximate or substitutive.

One of the immediate difficulties is the environmental factor in alcohol addiction, and a doctor can do very little to alter that. All that can usually be done is to help the patient live in his given environment.

The question of the treatment has been obfuscated to no small degree by failure to differentiate between addiction and symptomatic inebriety. When drinking is incidental to feeble-mindedness, to psychosis, or to some severe psychopathy, the treatment must refer primarily to the basic condition, not to the symptom. It has been noted that not more than 60 per cent of abnormal drinkers are neurotics or social drinkers, and that some 40 per cent are psychotics, psychopaths, or feeble-minded.

Persuasion, religious and moral arguments, and threatening or sympathetic suggestions must always have been used by

fathers, wives, husbands, and friends of alcoholic patients, but when the treatment of alcohol addiction was attempted systematically, drug therapy, backed by various rationales, was first used, and the psychotherapeutic approach developed only later. In the modern treatment of addiction, psychological methods have begun to predominate, but drug therapies are still widely used. The main issue today is drug treatment versus psychotherapy, although almost no drug treatment entirely lacks a psychological element. Within each school differences center around the specific methods, around the question of whether the patient should be treated in his own home or in institutions, and around the type of institution. If the patient is placed in an institution he hardly gets there before a drive is made against the "unjust" incarceration, either by himself or by friends disposed to moderation. The reasons advanced, which unfortunately seem to have weight with those not so close to the patient, are: "The man is not crazy at all and therefore does not belong in the insane asylum. Among the insane he will have to become crazy. He has to be given a chance to show that he wants to do better, etc." Thus the wife, who usually assumes the burden of commitment, weakens, even though at the time of commitment she gave solemn assurance of her firmness. The patient is given another trial, which soon ends in failure again.

The use of sedatives is incidental to practically every form of treatment, although some therapists try to avoid them as far as possible. It is generally agreed that morphine is contraindicated in chronic alcoholism; nevertheless, it is still given at times. The barbiturates are widely used at present; Lee has pointed out that the prevailing tendency to give large doses of barbiturates may make the use of any kind of additional sedatives fatal. Bromides are also much used, but caution relative to their use is being voiced. Paraldehyde, which has been found the most appropriate sedative in delirium tremens, has been suggested in the treatment of alcohol addiction, although its habit-forming properties must be considered. So often we see examples confirming the parable related in St. Matthew's Gospel:

"When the unclean spirit is gone out of a man, he walketh through dry places, seeking rest, and findeth none.

"Then he saith, I will return into my house from whence I came out; and when he is come, he findeth it empty, swept and garnished.

"Then goeth he, and taketh with himself seven other spirits more wicked than himself, and they enter in and dwell there; and the last state of that man is worse than the first."

What may be expected, then, of the future of the treatment of alcohol addiction? One possibility is that systematic research may reveal psychosomatic relations in the genesis of abnormal drinking which at present are unknown. Much research has centered around the psychological changes brought about by addiction, but few attempts have been made to learn whether the addict—and we exclude the symptomatic drinker—has characteristically a specific psychosomatic deviation. Fleming has suggested, "if there could be created an institute for the study of alcoholism where the biochemist, the internist, the psychologist, the anthropologist, the psychiatrist, and possibly the theologian, working cooperatively could each bring to a common focus, on the manifold problems of alcoholism, his own special knowledge, then it should be possible to remove from this field some of the ignorance, prejudice and charlatanry that characterize it today. Such an institute would provide a place where, under standardized conditions, the different methods of handling drunkards could be tested and compared."

Unless a psychosomatic basis of addiction, and consequently of its treatment, is found, the only possibility is to bring greater order into psychotherapeutic procedures.

The medical profession deserves the grateful recognition and regard of all other callings in modern life. It has always insisted that the practice of medicine is a profession and not a trade. Trade is occupation for livelihood; profession is occupation for the service of the world. Trade is occupation for joy of the result; profession is occupation for joy in the process. Trade is occupation where anybody may enter; profession is occupation where only those who are prepared may enter. Trade is occupation taken up temporarily, until something better offers; profession is occupation with which one is identified for life. Trade makes one the rival of every other trader; profession makes one the co-operator with all his colleagues. Trade knows only the ethics of success; profession is bound by lasting ties of sacred honor.—President Faunce, of Brown University, in an address to the Rhode Island Medical Society, 1905.

INTRAMURAL POSTGRADUATE EDUCATION IN OBSTETRICS FOR PRACTICING PHYSICIANS

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Very little has been published about the type of postgraduate course I wish to describe to you. Litzenberg⁽¹⁾ recommended a course given in a medical center rather than in the physician's home town. His reasons were that the student enjoys and benefits more from the course given in a university atmosphere. There are no demands made upon his time by current work. He meets and talks with physicians from other parts of the state. He sees a university obstetrical clinic in action and also comes into contact with other practitioners. Finally, he has opportunities for talking with residents, interns, and staff men about his problems and theirs. The truth of these assertions was borne out by our experiences of last year. Lapham⁽²⁾ suggested that one type of intramural course should extend three months and include the same type of training as that received by an intern: work in prenatal and postpartum clinics; didactic teaching; assigned reading in current literature; routine ward rounds, with discussions of the methods of handling normal and abnormal cases; and in the latter part of the course the actual delivery, under supervision, of such cases. The short time at our disposal prevented us from offering any such all-inclusive program. At the University of Oklahoma a well planned course in obstetrics and gynecology was given during 1940-1941; twenty students attended over a period of fourteen months. The course was terminated because, as a result of war conditions in the state, there were no candidates. This course ran for two weeks, five and a half days a week, and eight hours a day. Only five of the eighty-eight hours were devoted to pediatrics. Anatomy, pathology, neurosurgery, pediatrics, urology, surgery, medicine, and psychiatry (in their relation to pregnancy)

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1. Litzenberg, J. C.: Need for and Organization of Postgraduate Medical Education as Part of the State Educational Program. Illinois M. J. 79:117-126 (Feb.) 1941.
2. Lapham, M. E., in Proceedings of the First American Congress on Obstetrics and Gynecology, 1939.

were included in the curriculum. Daily⁽³⁾ has listed many of the pertinent facts concerning intramural obstetrical teaching in eighteen schools, and his chart presents a rapid survey of available courses throughout the country.

Our course in North Carolina is five days in length, Monday through Friday inclusive. It is given at any time from April through November when there are from four to six applicants, except during certain periods when the instructors are attending medical meetings, participating in seminars, or in other ways adding to their own store of knowledge. This plan serves a double purpose: it helps the instructor to keep abreast with current ideas and it breaks the monotony of repetition week after week. It was decided after a preliminary trial period that three, or at the most, four weeks was sufficient to dull the pristine brilliance of the presentations and that a week of other work was necessary to restore the original luster.

The course is evenly divided between obstetrics and pediatrics, half the day being devoted to each subject. Instruction consists of attendance at clinics and ward rounds, round-table discussions, and the observation of actual obstetrical procedures. The complete clinical facilities of the obstetrical and pediatric services at Duke Hospital are available for purposes of instruction. The men are notified of all deliveries, normal or otherwise, but attendance is not compulsory. Since their time in the institution is short the men are called from their pediatric classes for unusual obstetrical cases when they occur in order to give them as wide an experience as possible with the material at hand. All interesting current obstetrical manipulations such as sterile vaginal examinations for bleeding and the induction of labor by rupture of the membranes and insertion of bags are brought to their attention at any time day or night.

Dr. George M. Cooper, Director of the Maternal and Child Health Department of the State Board of Health, conceived and made possible this project. The course is offered free. The only expense to the physician is his transportation from his home to Duke, and back. The cost is covered by a grant of Social Security Funds to the State Department of Health obtained through the

U. S. Children's Bureau. The course is open to any registered physician in North Carolina except those who restrict their practice to one of the specialties. The men are housed in the graduate dormitory on the men's campus and are served their meals with the house staff in the doctors' dining room of the hospital.

Out of the 1075 general practitioners and public health officers who received application blanks last year, 92 (8.5 per cent) attended the course. Their ages ranged from 27 to 74. In the older group there were two men of 71. One man was first licensed to practice medicine in 1893, one in '96 and two in '97. At the other end of the age scale were three men licensed in 1938 and three licensed in 1939. The great majority were between 38 and 58 years of age. The men came from forty-three of the one hundred counties of the state. Two women physicians attended.

The foregoing figures are for white physicians only. An identical course was offered for the colored physicians. Three groups of five men each attended the course which was held at the Lincoln Hospital (colored). There were 151 registered colored physicians notified of the course, and 10 per cent attended. Three additional men applied but were prevented by illness or other good reasons from attending.

The instructors in the course are associated with three organizations in the state. Each is consultant in his field to the State Board of Health. They are also professors of obstetrics and pediatrics respectively in the School of Public Health of the University of North Carolina, and hold staff appointments in the Duke University Medical School and the Duke Hospital. To be eligible for an instructorship the physician must be certified by the appropriate specialty board or be adequately prepared for such certification, which must be obtained within two years.

The courses are conducted almost entirely by the two instructors. In this way continuity and coherence are ensured, and these are important factors when the duration of the course is so short. As is desirable, other ideas and personalities are introduced on rounds and in the attendance at deliveries and other obstetrical procedures, all of which are conducted by senior or junior staff members of the hospital obstetrical service.

3. Daily, E. F.: Intramural Postgraduate Education in Obstetrics and Pediatrics for Practicing Physicians, J.A.M.A. 115:1136-1137 (Oct. 26) 1940.

The obstetrical course was designed primarily to review basic obstetrical principles, with particular emphasis upon the chief causes of maternal mortality in the state. As an introduction and as the framework of all future discussion, the concept of adequate antenatal care is developed in detail. Not only are the men told what they should do, but an attempt is made to convince them—when necessary—of the value of the procedures undertaken: a complete history, a thorough physical examination, pelvic measurements and a careful vaginal examination, laboratory data, a conference with advice to the patient, and finally, instructions for return visits at the proper intervals. In North Carolina toxemia of pregnancy is responsible for more maternal deaths than any other one condition. The subject is discussed in detail, and the greatest emphasis is placed on the early recognition of toxemia and prevention of the serious late manifestations of the disease. Two other subjects are given particular attention: infection and hemorrhage. Although hemorrhage is third in importance as a cause of maternal deaths in the state, it is usually discussed early in the course because of its dramatic aspects. During the discussion many of the physicians present past or current problems from their own practice, and there usually results a general round-table exchange of ideas, free from restraint. During the remainder of the week a variety of subjects are discussed: the conduct of normal labor, dystocia and disproportion, analgesia and anesthesia, contraception, a differential venereal survey with color slides of all common lesions, something of the basic endocrinology of the menstrual cycle and pregnancy, and finally an outline of what constitutes an adequate method of attack in the problem of sterility.

The teaching is done around a small table, with reasonably comfortable chairs and plenty of ash trays. The instructor generally expresses his views on some subject for thirty to forty-five minutes and then invites comment from the group. From the beginning it is impressed upon the men that this is a completely informal gathering and that interruptions at any time are quite in order. As the week progresses and confidence develops, the volume of discussion grows. The instructors feel that the success of any week

is often directly proportional to the vehemence of the round-table arguments. When the men begin talking freely and easily, difficult cases or unfortunate results in past work are spontaneously described in order to illustrate the matter under discussion or to obtain advice and an opinion from the instructor. One man, for example, described a case of fatal postpartum hemorrhage which had occurred twenty-six years ago, and which was still bothering his conscience. There was a unanimous decision that it was a non-preventable death. The men present situations they have had to face in the back country and ask for solutions to the problems. It is sometimes a very difficult task to suggest good obstetrics and still to work within the limits set by the problem. One case presented was that of a primipara, eight and a half months pregnant, who was bleeding from the vagina. She had already lost about 500 cc. of blood; her blood pressure was 90 systolic, 70 diastolic, and her pulse rate 130. The nearest hospital was thirty-five miles away, over rutted country roads, and the doctor's small Ford was the only conveyance. The instructor had to suggest what should be done.

The course, on the obstetrical side, has some obvious faults. Five half-days is a very short time in which to try to modify ideas and habits which years of repetition have deeply ingrained in the physician's routine. The short time also limits the amount of work in which the men themselves can participate, in the outpatient clinics, for instance. And finally, because of a dearth of deliveries and again the short time of residence, the men cannot participate in actual deliveries.

Future plans are rather vague because of the present demands made upon physicians. So far this year we have already had twenty-eight applications for the course, and we expect a total of perhaps fifty. Essentially the same course is being given this year as last year. It is to be hoped that in the not too distant future some of the defects noted above may be corrected. I am very sure that if we could make available for postgraduate work a number of obstetrical beds and put the men to work in somewhat the manner Dr. Lapham⁽²⁾ has suggested, we should be just as agreeably surprised with the response as we have been with the attendance on the present limited course.

Abstract of Discussion

Dr. P. Y. Greene, Burlington, Chairman: Thank you, Dr. Makepeace. I think it is appropriate that we have the person who taught the pediatric side of the course to discuss this paper—Dr. R. B. Lawson of the School of Public Health, University of North Carolina.

Dr. R. B. Lawson (Winston-Salem): I would like to say a word about the pediatric angle of the course and the subjects we have taken up.

Our whole emphasis is not to make pediatricians out of the men who come in. The time is much too short to do that. What we are trying to do more than anything else is to improve their attitude toward pediatrics.

I feel, as do many other people, that the large part of the handling of children can be and should be done by general practitioners. It is only in those cases in which he gets into difficulty that he should refer the child to a pediatrician. Pediatricians are always going to have an additional amount of practice from people who can afford to pay a little more and who want a man especially trained in caring for children.

There is a tremendous variety of subjects to choose from in these courses. We select subjects for discussion in two ways: one is by finding what are the commonest causes of death and sickness in the state; and the other is by discovering what the individual group is particularly interested in. So, from the first standpoint we discuss primarily the care of the newly born child and premature infant, since these groups are such a large factor in the mortality rate in this state; then there is a rather careful discussion of immunization procedures; discussions of respiratory diseases—pneumonia and others—which play a large role in the mortality of children; discussion of the various stages of infant feeding, pointing out particularly some one or two recommended schemes; discussion of diarrhea and vomiting and worm infestations; and finally, discussion of pediatric techniques which can be used by the physician in his office. That is the groundwork for the course in pediatrics.

In addition to this basic program some men are going to be interested for instance in convulsions or genito-urinary complaints of one type or another; so there is plenty of opportunity to bring up other subjects. Sometimes you have to draw the men out to find their problems, and to get a good discussion. I think that this course has been very successful, and although at the present time there are not as many applicants as we would like to have, I think that is due partly to the war.

Dr. John H. Hamilton (Raleigh): I have talked with a number of general practitioners in rural communities, men whose judgment I respect highly, and these men tell me that this postgraduate course is the most valuable service which the State Board of Health has rendered the medical profession of North Carolina.

Exercise With Insulin. — Unusual exercise promotes the tendency to a reaction. With regular insulin or crystalline insulin one takes a little extra carbohydrate at the first sign of a reaction, but patients employing protamine zinc insulin will do better if they eat their extra quota of carbohydrate at the beginning of the exercise.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:590 (April 3) 1941.

THE TREATMENT OF CONGESTIVE
HEART FAILURE

C. H. ARMENTROUT, M. D.
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One of the most frequent and difficult problems encountered in the treatment of heart disease is congestive heart failure. Heart failure signifies the inability of the heart to discharge its contents adequately, with the resulting familiar manifestations—dilatation of the heart, venous congestion, dyspnea and edema. More than half of all patients with organic heart disease will, in the course of time, develop failure. In most cases this is due to chronic heart disease of many years' duration, but in a few individuals it comes as the result of severe acute strain. The course and prognosis vary tremendously, and it is not enough to know that the heart is unable to maintain an adequate circulation. It is important and often essential to know the cause of the myocardial insufficiency in order to render a reasonable prognosis and outline the best form of treatment. The treatment and advice we give these individuals often determine the duration of life after the onset of congestive failure.

The objectives in treating heart failure are: (1) to relieve the symptoms; (2) to increase the efficiency of the heart, so that it may carry on its function; (3) to limit the individual's activity, so that the capacity of his heart is not overtaxed.

Although each patient must be considered individually after careful and complete studies, a certain general outline of treatment may be followed. This may be conveniently divided into four parts: (1) diet, rest and regulation of exercise; (2) the administration of digitalis and other allied drugs; (3) the administration of diuretic drugs; (4) special therapeutic measures, including venesection, paracentesis, and thyroidec-tomy. It is important to treat not only the congestive failure but also the condition which is causing the failure.

The first principle in the treatment of heart failure is rest and the restriction of activity. For most patients it is best to have a short period of bed rest at the beginning

—Read before the Tenth District Medical Society, Asheville, May 27, 1942.

of treatment. The advice to go to bed frequently has a grave significance for the patient, but he will understand it better and fear it less after a few days when he notices an improvement in his symptoms. For the very ill patient absolute bed rest in the upright position is necessary. The patient is discouraged from indulging in any exertion, even turning from side to side. After the patient becomes ambulatory the limitation of activity is most important. His daily activities should be discussed and a program to readjust and limit them should be given in detail. A later rising time in the morning and an earlier retiring time at night, a period of rest in the reclining position after meals, walking slowly, and avoidance of hurrying and climbing are among the instructions given the patient in whom failure is manifest.

The regulation of diet and fluid intake is an important part of the treatment of congestive failure. Fluids and food should be given in small amounts and gradually increased as the patient shows improvement. The Karell diet, consisting of 200 cc. (7 ounces) of skimmed milk four times a day with no other fluids or food, may be given for two or three days. After this brief period a more general diet containing the necessary proteins and vitamins is given. Most patients will get along very nicely on a diet of 1200 to 1500 calories and a fluid intake limited to 1000 to 1200 cc. An excess of salt is to be avoided, but it is not necessary to have a diet devoid of salt. It is well to remember that it is the sodium ion that is the principal factor in the retention of fluids and that this has the same effect whether given in the form of sodium chloride, sodium bicarbonate or any of the other sodium salts. It would be of very little benefit to restrict sodium chloride in an edematous patient, and then give sodium bicarbonate. Subcutaneous or intravenous fluids must be given very cautiously in the presence of congestive failure, for edema of the lungs or dependent edema may be precipitated by such therapy.

Digitalis is the most valuable drug in the treatment of heart failure. It is especially important in the case of failure with auricular fibrillation, but its usefulness is by no means limited to this type of case. In the presence of failure with a normal rhythm or even in the case of complete heart block with a rate of from 30 to 40 per minute, digi-

tal is very frequently helpful. There is no contraindication to digitalis except in the rare individual who is hypersensitive to the drug and in the occasional case of Adams-Stokes syndrome, which is manifested by a very slow heart rate, with syncope and epileptiform convulsion. Complete heart block with faintness and dizziness is no contraindication to the drug.

The most frequently used and most satisfactory preparation of digitalis is the powdered leaf. The tincture and infusion are less stable and deteriorate rapidly with age. It is also much more difficult to measure the dose satisfactorily with these forms of the drug. Fifteen drops of the tincture are usually taken to mean 15 minims, when in reality 1 drop of tincture is equal to about $\frac{1}{2}$ minim, depending on the size of the dropper.

Digitalis saturation or digitalization is the only satisfactory method of dosage. Small tonic doses, formerly much used and even now occasionally prescribed, are of no benefit in the very sick patient, while large doses may be life saving. It must be recognized, however, that small doses may be of benefit when there is poor heart tone and not much congestive failure. However, this condition is difficult or impossible to prove. Digitalization consists in giving digitalis until the desired effect is obtained or until there are toxic symptoms. Digitalization is present only when the patient's symptoms are lessened, when diuresis has resulted, and when the pulse rate has been slowed to below 80 per minute and the pulse deficit has disappeared. The approximate dose required to digitalize a patient is 1.5 grains or 1 cat unit of the powdered leaf for each 10 pounds of body weight, plus 1.5 grains for each day required to effect digitalization. Absolute accuracy in dosage is impossible, but the above calculation serves as a useful guide. Some patients need more and some less. As a rule, children and thin individuals require more than the dose indicated by the weight rule.

The speed with which digitalization is accomplished depends on the patient's condition. If there is considerable urgency the calculated dose may be given in eighteen to twenty-four hours, either in three equal doses or by the Eggleston method, which is to give half of the calculated dose at first, then half the remaining dose in six hours,

and the rest in another six hours. If there is less urgency, the same effect may be accomplished by giving 3 grains (2 cat units) three times daily for two days. If the patient is ambulatory the drug may be given in $1\frac{1}{2}$ grain doses three times a day for six or seven days. When great speed of action is required (as in acute heart failure), digitalis may be given intravenously. The preparations for intravenous use are marketed in ampules and contain $1\frac{1}{2}$ grains of the powdered leaf for every 1 or 2 cc. of solution. The dose required for saturation is the same as that when it is given by mouth. As much as 10 cc. (containing $7\frac{1}{2}$ grains of the powdered leaf) may be given at one dose and repeated in three or four hours. Usually not more than two intravenous doses are required before the drug can be started by mouth.

The second important principle of digitalis dosage is the maintenance of digitalization. Once digitalization is secured and the patient is at his best, without toxic symptoms from the drug, a small daily ration should be continued indefinitely or as long as there is need. In the vast majority of cases this means as long as the patient lives. There are a small number of cases in which the cause of the heart failure can be corrected and the need for digitalis overcome. The most common of these conditions are acute rheumatic myocarditis, beriberi heart, hyperthyroidism, arteriovenous aneurysm and constrictive pericarditis. The daily dose which is required to maintain the effect of digitalis satisfactorily in the average adult is $1\frac{1}{2}$ grains of the powdered leaf daily. In a few patients half this amount suffices, but in some twice this amount may be necessary. The average daily ration of $1\frac{1}{2}$ grains can be tried at the onset and increased or decreased later. The patients themselves often become expert in determining the daily ration. They often find they get along better by omitting the digitalis one or two days a week. In determining the maintenance dose, not only the objective signs but also the experience of the patient should be considered. The common fear that digitalis will lose its efficacy if too long continued is unwarranted. If this plan of maintaining digitalization is pursued we will no longer encounter the repeated attacks of heart failure with spectacular recovery on administration of digitalis.

Although permanent failure and death do eventually occur, lives are often prolonged for years and activity maintained without a break, with the proper use of digitalis.

There are two drugs which have a digitalis like action—strophanthin or ouabain, and the glucosides of squill. It is necessary only in emergency to use strophanthin, and then it is questionable whether this has any advantages over digitalis given intravenously. However, in patients who have not had digitalis or strophanthin previously, it may result in great improvement when injected intravenously in doses of 1/240 to 1/120 grain. It is a matter of choice whether this drug or digitalis should be used. In Europe strophanthin is often employed successfully, while here digitalis has been preferred. Strophanthin should not be given to a patient who has had digitalis within forty-eight hours. In the occasional patient who has an idiosyncrasy to digitalis, one of the preparations of squill can be used. One of the most popular and reliable preparations is marketed under the name of uarginin. Each .5 mg. of uarginin is equivalent to $1\frac{1}{2}$ grains of digitalis. Patients who cannot tolerate digitalis can usually tolerate uarginin, and their congestive failure can be controlled by this drug.

When the pulmonary congestion, dyspnea and edema do not respond to rest, diet, and digitalis or one of its substitutes, they will usually respond to diuretic drugs. Of the purine group of diuretics, theobromine, theocalcin and aminophylline are the most valuable. The first two, theobromine and theocalcin, are given in doses of $7\frac{1}{2}$ to 15 grains and aminophylline in doses of 3 to 6 grains orally three times a day. Whether or not these drugs are effective, it is better to discontinue them after ten to fourteen days, then resume them again in repeated courses. These drugs usually produce a mild, continual diuresis, and about half the patients who do not respond to rest and digitalis will improve on the administration of one of the purine diuretics. The chief difficulty with these drugs are that they are apt to produce toxic symptoms, chiefly nausea and vomiting, in a large percentage of patients.

Mercury is the most effective and powerful diuretic. It has long been used in the form of calomel by mouth, but in recent years more satisfactory results have been obtained by the use of novasurol, salyrgan

and mercupurin given intravenously or intramuscularly. The last two preparations are newer and less toxic than novasurol. These are given in initial doses of 1 cc. of a 10 per cent solution, then at intervals of a few days to one week in 2 cc. doses. These drugs can be given over long periods of time at intervals of a few days, without harmful effects. Mercurial diuretics are very irritating, and if even a small amount is spilled outside of the vein a very extensive slough may occur. This danger can largely be prevented by diluting the drug with 10 cc. of sterile water. Satisfactory results may be obtained when these drugs are used in suppositories. Although the diuresis is not as profuse as when they are given intramuscularly or intravenously, the advantages afforded by the simplicity of administration are obvious. Ammonium chloride or nitrate will usually increase the diuresis when given at the same time as the mercurial diuretics.

Drugs other than digitalis and the diuretics are of secondary importance in the treatment of heart failure. At times, a dose of morphine or of some opiate given to a markedly distressed patient who has been unable to sleep for days may afford rest which starts the patient on the road to recovery. Another drug which is very useful in the distressed patient is paraldehyde, which can be given intravenously in doses up to 2 cc. This drug has a very slight depressing effect and is one of the safest drugs in cases of heart disease. Oxygen may relieve the cyanosis and dyspnea of heart failure and may help in tiding the patient over the period of acute failure. It is of especial benefit in cases of pulmonary infarction and infection. Laxatives and purgatives are often of distinct value in getting rid of edema. A saline laxative each day will result in watery stools and loss of considerable fluids. Too vigorous purgation is not desirable because of the weakening effect on the patient. Intravenous glucose solution, suggested because it might supply food to the heart muscles, has been disappointing in the treatment of heart failure and in the state of shock following coronary thrombosis. If given at all it should be reserved for the obstinate cases not yielding to other forms of treatment.

There are various mechanical therapeutic procedures which are often of distinct value in the treatment of heart failure. Venesection is not often necessary, but may be

life saving in emergencies. Venesection is applicable in two different types of cases: (1) in acute failure with pulmonary edema, and (2) in chronic cardiac patients with obstinate edema and a persistently high venous pressure in spite of rest, digitalis and diuretic drugs. Another method which may temporarily relieve the heart of excess blood is constriction of the four extremities by blood pressure cuffs or similar bands, cutting off temporarily the venous return.

In persistent and massive edema of the legs and scrotum multiple punctures of the skin may be made, and as much of the fluids as possible drained off. A method much to be preferred is the use of Southey's tubes. These are small cannulas which are inserted beneath the skin by means of trocars, as many as three or four being inserted into each leg. Enormous quantities of fluid can be drained off by this method. When other methods fail to relieve the ascites and hydrothorax, and when oppression from the fluid is disagreeable, paracentesis should be done. This is especially important in the patients with hydrothorax, because the already embarrassed heart is further taxed by the fluid in the pleural cavity. Total thyroidectomy has been a very interesting innovation in the treatment of heart disease, especially in those cases in which there is persistent cardiac failure. For a good many years this operation was frequently performed, with the thought that if the basal metabolic rate were lowered the load on the heart could be much reduced. The operative mortality is high and the results are questionable from this type of operation. At the present time total thyroidectomy for treatment of congestive failure has been almost entirely discarded.

Summary

The treatment of heart failure consists of:

- (1) Diet, rest and regulation of exercise.
- (2) Digitalis and allied drugs.
- (3) Diuretic drugs, the most important of which are the purine and mercurial diuretics.
- (4) Other therapeutic procedures, including venesection, blood pressure cuffs, paracentesis and Southey's tubes.

Give me health and a day and I will make the pomp of emperors ridiculous.

—Ralph Waldo Emerson.

ADVANCES AND LIMITATIONS IN THE TREATMENT OF GONORRHEA IN THE FEMALE

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In view of the voluminous literature that has appeared on the treatment of gonorrhea since the advent of the sulfonamide drugs, this dissertation can scarcely claim to be a review of the subject. Rather I must confine the paper to a practical abstract, pointing out some of the recent advances and emphasizing the persistent limitations of the treatment of Neisserian infection in the female.

One must never lose sight of the fact that in the therapy of any disease, especially in that of gonorrhea, there is an ideal method of treatment, and there is the economic and practical method by which the majority of patients must be treated. The ideal treatment is by no means the regimen which can be applied to the usual patient.

One of the most difficult problems in the treatment of gonorrhea in the female is the diagnosis of the disease. The diagnosis of the acute phase is not ordinarily arduous, although symptoms even in this stage may be masked in the fair sex. But the chronic phase presents a problem in diagnosis, not only on first contact with the patient but in subsequent follow-up examinations to determine the effectiveness of treatment. A primary source of confusion lies in the common inability to recognize the gonococcus. Cooke⁽¹⁾ observed that in a practical examination laboratory technicians returned "a totally unexpected number of both false negative and false positive reports." Van Slyke⁽²⁾ made the same startling discovery.

Added to this is the difficulty of gathering material in the female suitable for making a bacteriological diagnosis. The old haphazard method of making cervical and urethral smears by merely brushing a swab in and out of the urethra and the cervical os is no longer tenable. In the chronic stage the gonococcus is recoverable only in the pus discharged from a nidus of infection—that is,

the gland-bearing areas—, and swishing a swab in and out does not produce a discharge of pus. Pus must be obtained by squeezing the cervix between the speculum blades, by milking the urethra, and by expressing secretion from the Bartholin gland. Even smears made most carefully are only 40 to 60 per cent as reliable as cultures. And the reported accuracy of cultures of swabbed material varies from 21 to 98 per cent. Skin tests⁽³⁾ and complement fixation tests have never proven wholly reliable, and are to be considered only as supportive evidence for diagnosis. No one procedure is infallible. Primary diagnosis still must rest on clinical interpretation of the history and physical findings, supported preferably by culture of the organism or by whatever laboratory method is available. Interpretation of the progress of treatment rests also on the bacteriological method available, plus the clinical course of the disease.

Before considering the treatment of gonorrhea, let us review some pertinent and often forgotten facts about the pathology of the infection⁽⁴⁾. Gonorrhea is substantially a self-limited disease. If the trauma caused by the over-zealous physician and the uncooperative patient were eliminated, most acute infections would subside spontaneously. Gonorrhea is not a surface disease, but a disease of tissue penetration. The gonococcus does not invade squamous epithelium but it does penetrate columnar types of epithelium. In the female this means that the organism does not involve the vagina and vulva. Inflammation of these surfaces is due to a toxin or to the irritating passage of pus over the epithelium. Transitional epithelial cells which are firmly fixed to the submucosa are penetrated by the gonococcus, but here there is a good immunity response tending to limit the infection. Loosely adherent transitional epithelium, on the other hand, such as is found in the bladder, does not possess a good immunity response, and the infection is poorly controlled. This is especially true when injudicious interference produces trauma of the tissue. Thus, infection by the gonococcus involves primarily poorly drained areas of columnar epithelium—namely, Skene's and the periurethral glands, Bartholin's glands, and the cervical glands. Invasion of the bladder, endometrium, or tubes occurs only

¹Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Charlotte, May 13, 1942.

1. Smith, Dudley R., and Deakin, Rogers: Treatment of Gonorrhea in the Female with Sulfathiazole, *Am. J. Obst. & Gynec.*, 43:296-302 (Feb.) 1942.
2. DeLee and Greenhill: *Year Book of Obstetrics and Gynecology*, Chicago, The Year Book Publishers, 1941.

3. Corbus, Budd C., and Corbus, Budd C., Jr.: Cutaneous Diagnosis of Gonococcal Infections: Further Report, *J.A.M.A.*, 116:113-115 (Jan. 11) 1941.

4. Pelouze, Perry S.: Personal Communication.

secondarily by interference, which may be in the nature of too vigorous local therapy, catheterization, douches in the presence of a retroversion, or intercourse.

The response of tissue to the gonococcus or its toxin is a polymorphonuclear exudate. Pus or tissue containing a round cell exudate indicates not gonorrhea but trauma. After the acute phase of the disease, persistence of infection is due to a nidus of gonococci in poorly drained areas. Compound racemose glands are not well drained, and for this reason the infection is most persistent in the cervical glands.

With these facts in mind, it is not difficult to understand why the sulfonamide drugs have been of such value in the treatment of acute gonorrhea. By focusing attention on the specificity of an orally administered treatment, the drug diverts the attention of the physician and the patient from local therapy. Nature is allowed better than an even chance to limit the infection.

The treatment of acute gonorrhea resolves itself into three factors: First, general measures such as rest, sedation, and omission of alcohol and condiments tend to improve the patient's resistance to infection and lessen the toxin response. Second, the interdiction of intercourse and the omission of attempts at local therapy (which includes examinations, douches and topical applications) prevent complications. Infection by the gonococcus does not ordinarily produce complications; infection plus trauma, however, causes complications. Third, the sulfonamide drugs seem to shorten the natural course of the disease.

The consensus of the literature has elected sulfathiazole as the drug of choice. Sulfanilamide was found by the Cooperative Clinical Group to have a low cure rate (18 per cent) along with high toxicity. Sulfapyridine equals sulfathiazole in its cure rate, but is again toxic, and the patients must therefore be closely watched. The newer drugs such as sulfadiazine and sulfacetimide (sulamyd) have not yet received adequate trial for conclusions. Sulfadiazine seems to be as efficient as sulfathiazole, but is about three times as expensive.

Two schools of thought exist concerning the manner of administering sulfathiazole. Most authors—notably Smith and Deakin⁽¹⁾, Lewis⁽⁵⁾, Cohn, and Steer and Adler⁽⁶⁾—have recommended either 3 Gm. the first day and

2 Gm. thereafter for a total of ten days, or an entire course of 2 Gm. daily for twelve days. The United States Public Health Service, on the other hand, favors a short, intensive course of 4 Gm. daily for five days. The drug is then stopped for five days. If there is slight or no improvement, and the patient does not react unfavorably to the drug, a second five day course is given. The Cooperative Clinical Group reports a 75-80 per cent cure rate by the first course of treatment, with many of the remaining 20 per cent cured in a second course. Under the best conditions, with adequate tolerance of the drug and good cooperation by the patient, the cure rate may run as high as 90 per cent.

There are a number of patients whose infection is resistant to sulfathiazole. These as well as the chronically infected cases require further consideration.

At the end of the toxic stage of the acute infection and in the chronic phase, local therapy is justifiable. Under the former circumstance such therapy should be gentle. Primarily, the localization of the gonococcus must be determined. The purulent contents of glands are expressed to promote drainage. Mild astringents and antiseptics, such as 0.5 per cent protargol should be applied locally. Douches should be gentle. Heat in any of its forms, such as diathermy and Elliott treatments, is indicated. Fever therapy is decidedly effective in killing the gonococcus, but it is an expensive treatment, the facilities are rarely available, and it is as radical as a major surgical procedure. The nature of the treatment depends upon individual circumstances. The essential factor is drainage or eradication of a nidus of infection. Cauterization or surgical removal of a chronic focus is most satisfactory. Preservation of tissue, while most desirable, is not always practical.

Sulfathiazole as the drug of choice has been of great value in the treatment of acute Neisserian infection as well as in flare-ups or re-infections. It is not universally successful, however, and local and surgical therapy must still be employed in some cases. In the chronic stage of the disease, abscess formation remains a surgical problem. A

5. Lewis, Robert M., in *Conn. State M. J.* 1:662-663 (Nov.) 1940; cited in 1941 Year Book of Obstetrics and Gynecology, Chicago, Year Book Publishers, p. 438.
6. Rice, John L.; Cohn, A.; Steer, A.; and Adler, E. L.: Recent Investigations on Gonococcal Vaginitis, *J.A.M.A.* 117:1766-1769 (Nov. 22) 1941.

trial of sulfonamide therapy should be made, but success is unlikely at this stage.

Abstract of Discussion

Dr. C. Rule (Winston-Salem): I should like to ask Dr. Lounsbery what he thinks of the fixation test diagnosis?

Dr. James B. Lounsbery: In my limited experience and as I understand it from reading, fixation tests are efficient in about 80 per cent of individuals on whom they are used. False positive tests are not very common; false negative tests are very common. For that reason we can't rely on fixation tests. We have to consider the clinical picture and the evidence given by whatever laboratory procedure is employed. Usually, of course, we have only the smear available. Occasionally a culture is available.

Dr. Rule: Do you happen to know if the fixation test reverts after cure?

Dr. Lounsbery: Yes, it does.

Dr. Rule: How quickly?

Dr. Lounsbery: Within about three months, I believe.

I'd like to mention a phase of this subject that I didn't discuss in the paper, and that is the treatment of salpingitis by the sulfonamide drugs. If the salpingitis is acute and has not gone on to abscess or localization of an exudate in any portion of the tube, sulfanilamide and sulfathiazole seem to be quite effective in eliminating the toxicity and eradicating the infection. Occasionally hydrosalpinx occurs after the acute infection is arrested by the sulfathiazole, but it is sometimes a little hard to differentiate acute salpingitis—truly acute salpingitis—from hydrosalpinx.

The effect of the sulfonamide drugs on the hydrosalpinx and acute ovarian abscess is practically nil. In such cases the abscess must be drained and removed. I believe it is Dr. Flippin who demonstrated that in a tubo-ovarian abscess there is produced an acid which counteracts the sulfonamide drugs. Of course, you could not expect the drug to be effective in that situation.

The Applications of Science.—Science is under fire for the suffering brought about by its applications, especially in the present war. Science is in no position to disavow its responsibilities in the problems of peace and war. As in epidemics of disease due to the ignorance of medicine we need not less but more medical knowledge, so in seeking a cure for the scourge of war we need not less but more science. The remedy we trust may ultimately be found by that most difficult of all biological sciences—the study of motives and human behavior. Science can reply to its critics that the applications of science are merely tools which men with good or bad motives use for their good or evil ends. The same can be said of printing. Even if we admit the responsibility of science for deaths due to its applications we will find that its applications have brought about even greater savings of life. The legend to a reproduction of the title page of Jenner's paper on vaccination published in 1798 reads: "The application of the facts presented in this paper has probably saved more lives than the total of all lives lost in war." The statement is easy to believe, since it has been estimated by Haggard that in the 100 years preceding Jenner's paper, sixty million people in Europe died of smallpox.—Albert Francis Blakeslee: *Individuality and Science*, Science 95:7 (January 2) 1942.

A NEW PHYSICAL SIGN IN INFARCTION OF THE LUNG

ROBERT L. McMILLAN, M. D.

WINSTON-SALEM

Infarction of the lung is a complication frequently encountered in both medical and surgical patients. It is of grave prognostic import in medical cases and is frequently a cause of death, often sudden, in both medical and postoperative cases.

Curtis F. Garvin¹⁾ reported an analysis of 771 consecutive autopsies at the Cleveland City Hospital on patients in whom the chief cause of death was heart disease, and found that 45.9 per cent of these patients had infarction of one or more organs and that 28.7 per cent showed infarctions of the lung.

Infarction results from obstruction of the blood flow to a portion of the lung and subsequent hemorrhage into the lung tissue involved. The commonest causes are embolism to or thrombosis of the pulmonary arteries. Both of these conditions are favored by chronic passive congestion of the lungs, liver and extremities; by thrombophlebitis of the veins of the extremities or other portions of the caval circulation; by trauma about operative sites; and by thrombophlebitis about an infection, fractured bone, or other traumatized tissue.

The classic symptoms are: sudden onset with pain in the chest, dyspnea, cough, red blood or blood-streaked sputum, cyanosis, and often sudden death. The patient is usually extremely restless, but is generally alert and does not present the toxic appearance of the patient with lobar pneumonia.

The symptoms as well as the clinical findings are dependent on two main factors: (a) the size of the infarction, and (b) its location. If the infarction is of only moderate size, physical examination shows the usual findings of consolidation of the lung—namely, dullness, rales, and bronchial breathing, with increased transmission of whispered and spoken voice sounds. Often there is a friction rub due to pleural reaction. In some severe cases there is pleural effusion which most often is serosanguineous and contains

¹⁾ Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

From the Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

1. Garvin, C. F.: Mural Thrombi in the Heart as a Source of Emboli, *Am. J. M. Sc.* 201:412-415 (March) 1941.

bile pigments. These latter symptoms occur if the infarction is located at the periphery of the lung.

The condition most commonly confused with infarction of the lung is lobar pneumonia. Indeed, it is extremely difficult to differentiate the two conditions even with the aid of the x-ray. This fact has been well demonstrated by George R. Krause and Edwin M. Chester⁽²⁾, who found in a series of 344 patients with infarction of the lung who had come to autopsy that the correct antemortem diagnosis was made in only 22 per cent of the cases. In all patients in the series the infarction was considered as the important cause of death.

Because of the obvious difficulty in making this diagnosis clinically, our interest became centered in ascertaining some means of greater accuracy in recognizing infarction of the lung. Accordingly an effort has been made to demonstrate clinically some physical signs other than those already described in this condition. It was noted that almost invariably, in cases in which the infarction was of any appreciable size, these patients exhibited the most extreme tenderness on very light fist percussion. This has not been found true in the few cases of lobar pneumonia which have been available during the eighteen months of this clinical study. The percussion has been performed by a very gentle tapping with the ulnar side of the closed fist, so as to produce a very slight jarring effect. The sign may also be elicited in most cases by light direct or immediate percussion with the finger-tips.

The response to this physical sign has been so dramatic in these people that it led to the correct diagnosis in the 14 cases observed⁽³⁾. It is not presented here as absolutely pathognomonic. Like any physical sign, it must be correlated with the other findings before an accurate diagnosis of infarction can be made.

2. Krause, G. R. and Chester, E. M.: Infarction of Lung, *Arch. Int. Med.* 67:1144-1156 (June) 1941.

3. Since this report was written 4 more cases of infarction of the lung have come under observation, all of which presented the physical sign described above. In one of these the diagnosis was proven by autopsy.

Identification Cards for Diabetic Patients.—An identification card should be in the pocket of every diabetic patient. It is true that with protamine zinc insulin, reactions are less common than heretofore, but they may occur and the patients must not take any chances.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:589 (April 3) 1941.

PENTOSURIA

DAN N. STEWART, M. D.

HICKORY

In presenting this brief discussion of pentosuria, I do not propose to bring any striking new facts to your attention. My purpose is to recall to your minds this interesting condition, to focus your attention on the practical value its diagnosis may have, and to emphasize one simple test for its detection.

The term "pentosuria" refers to a condition in which there is present in the urine a substance that reduces copper and gives a reaction that cannot be distinguished from that of glucose. This condition is further characterized by a normal fasting blood sugar and a normal glucose tolerance test. It is apparently an anomaly of metabolism and produces no clinical symptoms. It is a laboratory diagnosis accomplished by the combined examination of the blood and urine. It occurs probably only in the Jewish race and is a familial disease.

My interest in this anomaly was stimulated several years ago by the discovery of a case of pentosuria in the children's ward of the Hospital of the University of Pennsylvania, and later in three other members of the patient's family. These cases have been previously reported, and one is repeated here only as a text.

An 8 year old Jewish girl was admitted to the service of Dr. J. C. Gittings because of enuresis and dysuria. Physical examination was negative except for an enlarged and thickened bladder sphincter. This was considered to be congenital. Noteworthy, however, was the fact that practically every urine specimen examined reduced Benedict's solution. Fasting blood sugar and several glucose tolerance tests were normal. Renal glycosuria was ruled out when it was found that the urine was not fermented by yeast.

The lead was then furnished by a simple test for pentose in the urine described by Lasker and Enklewitz⁽¹⁾: One cubic centimeter of urine added to 5 cc. of Benedict's solution and left for several hours at room temperature gave reduction.

Further tests by Dr. William Sunderman⁽²⁾

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Charlotte, May 12, 1942.

1. Enklewitz, M., and Lasker, M.: Studies in Pentosuria, *Am. J. M. Sc.*, 146:539-548 (Oct.) 1938.

2. Sunderman, F. W.: Essential Pentosuria, *N. Clin. North America* 21:1245-1252 (July) 1937.

isolated the substance, established its melting point, and identified it as levorotatory xyloketose, the usual pentose to occur in pentosuria.

The simple test described—adding 1 cc. of urine to 5 cc. of qualitative Benedict's solution and allowing it to stand for several hours at room temperature—establishes the diagnosis of pentosuria if the solution is reduced. This diagnosis may be further substantiated by tests that are outside the scope of this paper.

Any individual whose urine reduces Benedict's solution and whose blood sugar is within normal limits should be suspected of having either renal glycosuria or pentosuria. Diagnosis of the latter condition may be made by the test just described.

The diagnosis of pentosuria is of practical importance, because patients presenting this anomaly are frequently treated for diabetes mellitus. The effect of such treatment on their health and mental outlook needs no comment. Such treatment would be of considerable economic importance in regard to eligibility for life insurance. Such a mistake need never occur if a blood sugar determination is always made before a diagnosis of diabetes mellitus is given.

The Effect of Social Changes Upon the Nature of Medical Practice.—The community has been subjected to experiences in the '40s undreamed of in 1910. Each of us, especially those charged with the welfare of many people, assumes daily responsibility at a rate which must be two or three times that expected of our grandfathers. With offices equipped with typewriters, filing systems, telephones; with automobiles and aeroplanes at our disposal, the pace of living has forged onward, but the basic qualities of our nervous system remain unchanged. To possess an automobile many families deprive themselves of home comforts and even food that would otherwise be available. Home in general is not what it was one or two generations ago. The nightly jam at movie theatres and other public resorts means rest and enjoyment for some people, but for many it reflects an unsuccessful escape from the trials and burdens of the day. Thrift has gone, social security has come; labor, not business, is in the saddle. As physicians our opinions about various aspects of this social upheaval apparently matter little, but the impact of social changes upon the nature of medical practice is of great concern. We have no figures from 1910 to contrast with 1940, but it is the impression of doctors everywhere that the number of nervous, tired-out people has increased greatly within this period. Fatigue has become an omnipotent factor, not to be left out of consideration in nearly every patient who consults us.—Arlie V. Bock: *Fatigue, Tr. and Studies Coll. Physicians Philadelphia* 10:79 (June) 1942.

HOT DOUCHE

C. A. ANDERSON, M. D.

BURLINGTON

The douche is of such universal usage that a home is hardly complete without a douche bag. Douches are commonly used for cleansing purposes or for applying an astringent or antiseptic solution to the vaginal mucosa. This treatment has no effect upon the deeper pelvic infections. The hot douche when properly used has a most beneficial effect on these deep infections.

The object of the hot douche is to reduce the congestion and thus increase the blood flow through the infected tissues. Reduction of the congested, swollen condition of the infected tubes lessens the resistance in the capillaries, increases the circulation through the part, and hastens the healing.

The sulfonamides are of great importance in pelvic infections, especially in the acute cases; but the hot douche properly used is almost equally effective and in chronic cases is possibly superior.

The hot douche of four or five minutes' duration over the commode, as commonly used, is of doubtful value. If one places his hand in hot water the capillaries dilate and the hand becomes red. There is a congestion, the very thing we are trying to relieve; but if one keeps his hand in hot water for thirty to sixty minutes, the capillaries contract and the fingers have a shriveled appearance for hours. The hot douche should last forty-five to sixty minutes and should be maintained at a uniform temperature as hot as the patient can comfortably bear it. Some patients with acute pelvic inflammation cannot take the hot douche for some weeks without an increase of the pain. In these cases the warm douche should be taken for an hour, one or two times daily, and the temperature gradually increased until the water is hot. Usually in three to six weeks the patient is greatly relieved.

In a disease which requires daily treatments of an hour for four to eighteen months, instruments for applying dry heat to the vaginal vault are not practical. If the tubes are sensitive, the insertion of the heat unit is more or less painful and may do more

First reported in the *Journal of the American Medical Association* for June 22, 1940.

damage than the treatment does good. Furthermore, the cost of the treatment is prohibitive to all but the wealthy. While the cost of the douche treatment is practically nil, it is probably superior to any dry heat treatment.

Maintaining the high uniform temperature of the douche in the past has been difficult. The little Hoffman clamp has solved that problem. The douche bag is filled with warm to boiling water and the tube is clamped tight enough for the water to cool to the desired temperature in the tube while it slowly trickles into the vagina. If there is much vaginal discharge an astringent or antiseptic can be added to the douche for a short time. A tablespoonful of table salt added to a half gallon of boiling water makes a 1 per cent solution. My patients tell me that one half gallon, or one bag full of hot water, lasts forty-five to sixty minutes. The patients are instructed to start treatment with warm water in the bag. When they return a week later they usually report that they are using boiling water in the bag. Occasionally one steps up the temperature too rapidly and scalds herself. After the patient begins using hot water, relief comes quickly. Some feel so well after one or two months' use of the hot douche that they stop the treatment, thinking they are cured. Usually the pain returns in a few days and they decide to continue the treatment.

Before starting the treatment the patient should be fully informed of her condition and of the possibilities and probabilities of relief and of cure. She should understand why the five-minute douche is worthless and why she should use the hot douche sixty minutes. Calling her attention to the effects of hot water on the hand in five minutes and in sixty minutes gives her a mental picture of the effects of the douche on the swollen tubes. She should be told that it will require many months' daily use of the douche to produce a cure, although she may receive relief in a few months. After the tubes become quiescent, the cervix can be cauterized if this is indicated.

I have had printed instructions similar to those below, and I read and explain these to each patient before giving her a copy. I also keep on hand Hoffman clamps, which cost less than \$1.50 per dozen, and give one to each patient, instructing her to keep the tube in the center of the clamp.

Instructions for the Hot Douche

Follow Directions Closely

Water
Add

For the first few days, while learning to control the flow, use water as warm as you can bear without scalding.

After you learn to control the flow, the temperature of the water in the bag may be gradually stepped up to boiling and allowed to cool in the tube to the desired temperature while it slowly trickles into the vagina.

Close the clamp until the water runs slowly, and bend tubing when you wish to stop the flow.

Should the water in the tubing cool too much, a slight release of the clamp will raise the douche temperature.

Don't use water too hot until you learn to control the flow to a slow trickle. Until you have learned the technique, you might test the temperature by letting the trickle of water fall on your forearm.

It is heat and not the quantity of water that is desired.

The douche must last for from thirty to forty-five minutes.

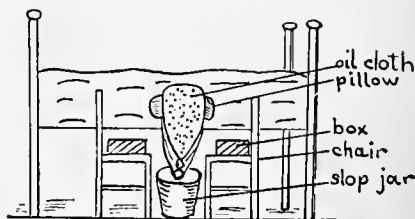
You may have to use the warm douche for some weeks before you can step the temperature up without causing pain. If the douche is uncomfortable or painful, stop using it until you see your doctor.

DANGER!—Use vaginal tube with holes in the side. The tube with a hole in the end (rectal tube) may cause serious trouble.

The bag should not be more than 2 to 3 feet above your body.

There are different modes of taking a douche. Use the mode you like.

1. Lie in the bath tub if the bathroom is a comfortable temperature.
2. Lie in bed with a douche pan—if you can do it without spilling water on the bed.
3. Place a slop jar beside the bed, a chair on each



side of it and a box on each chair if necessary to raise it to bed level. Place a hard pillow 6 or 8 inches from the edge of the bed, with a piece of oilcloth (not rubber) over the pillow and down into the slop jar, the lower end having been rolled and fastened with a safety pin, forming a conical spout. The douche bag is filled, the patient pulls up her gown, sits down, falls back with the pillow well up under the small of her back, places her feet on the boxes and if the room is cold wraps her limbs. The water drops into the oilcloth cone. Warm water should be used in the bag until one gets the knack of controlling the flow by using the clamp and bending the tubing.

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ANNUAL CONFERENCE OF SECRETARIES AND EDITORS

For many years, with the exception of 1940, the American Medical Association has invited the secretaries and editors "of constituent state medical associations" for an annual two-day conference during the third week in November at the A. M. A. headquarters in Chicago. The free exchange of ideas at this conference is of tremendous value to those in attendance; and it is hoped that they may carry home some of the enthusiasm engendered by contact with men from all parts of the country who are engaged in similar tasks.

Last year's conference was held just prior to that fateful seventh of December when the treachery of the Japs hurled our country into war. Even then much of the program was devoted to military medicine. This year it was inevitable that the impact of the war upon medical practice should be discussed from various angles.

The opening address, by North Carolina's

own Fred Rankin—now General Rankin, President of the American Medical Association—dealt chiefly with the effect of the war upon medical meetings and upon medical education. General Rankin considered it wise to abandon such large national gatherings as those of the American Medical Association and the Colleges of Physicians and Surgeons, but advocated instead "multiple small meetings", such as the state and district meetings, and small postgraduate assemblies. He repeated emphatically that it would be a grave error to abandon all medical meetings, but suggested the "consolidation and curtailment" of meetings so far as possible.

He gave assurance that medical education would not be interrupted, but rather speeded up, because of the war. Even the boys of 18 and 19 who are doing satisfactory work as bona fide premedical students will be allowed to continue their course undisturbed; although he and other speakers hinted that some military training may be interjected between high school and college.

Surgeon General Ross McIntire of the Navy made a fine impression upon his audience. One of the most inspiring bits of information of the whole conference was his revelation that the mortality from the first thousand casualties of the Solomon Islands was less than 1 per cent. He attributed this low figure largely to the free use of the sulfonamides and of blood plasma, and to the facility with which the wounded could be flown to base hospitals.

General McIntire expressed the hope that specialization would not be overdone after the war, and said that for medical practice to come under government control "would be disastrous." He said that he was not pessimistic, but that it was only being realistic to recognize that money would be scarce after the war and that the costs of medical care must be kept down. Another "knotty problem" to be met after the war is the proper distribution of doctors.

Among other speakers along similar lines were James E. Paullin; Thomas Parran, Surgeon General of the U. S. Public Health Service; L. G. Rowntree, Chief of the Medical Division of the Selective Service System; Creighton Barker, Secretary of the Connecti-

cut State Medical Society; and Walter F. Donaldson, Chairman of the War Participation Committee of the A. M. A.

Friday evening, November 20, was devoted to the annual dinner meeting of Editors of State Medical Journals. This was held at the Palmer House and was presided over by Dr. Stanley B. Weld, Editor of the *Connecticut State Medical Journal*. After an appetizer in the form of a brief address by Dr. Weld the real *piece de resistance* of the occasion came in Dr. Julian Price's paper on "Improving the Methods of Transmitting Information to Physicians." Dr. Price, who serves in the dual capacity of secretary of the South Carolina Medical Association and editor of its *Journal*, gave a critical analysis of the various state medical journals of the country. His criticism was fearless but not carping, and most of those who heard him doubtless profited by his appeal to make state journals more interesting to the average reader.

The problem of medical service plans is being attacked with increasing vigor in many localities. The entire Saturday morning session was devoted to a discussion of a paper on the Medical Service Plan of Massachusetts, another on Medical Service Plans of the Farm Security Administration, and a third on Recent Developments in Industrial Health Activities. Dr. James McCann, President of the Massachusetts Medical Service Plan, gave a detailed account of that state's experience. His paper was discussed by representatives from California, Michigan, Pennsylvania and New Jersey. It is interesting to note that the New Jersey plan is almost exactly like the North Carolina plan. In each state there is no income limit to the registrant, and professional service is combined with hospital insurance in the same contract.

It would be a fine thing if all the members of the American Medical Association could visit the headquarters of this organization, and see for themselves how seriously and how conscientiously its official family try to serve the interests of the great organization. Such a visit would inspire confidence in their sincerity as no amount of second hand information can do.

CIVILIAN MEDICAL CARE

The question of adequate medical care for the civilian population as well as for the armed forces was discussed by a number of the speakers at the Annual Conference of Secretaries and Editors. It has been generally accepted that the ratio of doctors to civilian population should not fall below 1:1500. Dr. Lahey and others stressed the urgent need for doctors in certain areas where defense projects have resulted in a mushroom growth of the population. Part of the duty of the Procurement and Assignment Service is to assist in providing medical men for such areas. Already two hundred and eighteen physicians have been "dislocated" ("relocated" would seem a better term) in one hundred and forty-two communities in twenty-nine states. One problem in such relocations is that of securing a license for a doctor moving from one state to another. Dr. Paullin—President-Elect of the American Medical Association—advocated "the abrogation of states' rights for the duration of the war" and the granting of temporary licenses to doctors who are disqualified for military service by age or some physical reason, yet who are willing to serve their country by going from an area well supplied with doctors to one less fortunate. This is a question to be seriously considered. Certainly we do not want in North Carolina an influx of refugee physicians such as are creating a great problem in some other states; yet we may need help in some of the thirty-eight counties with limited medical personnel listed by Mr. Pickens, of the Duke Foundation, in the October issue of the *NORTH CAROLINA MEDICAL JOURNAL*.

Some of the speakers admitted that the ratio of 6-7 physicians per 1000 men set by the army and navy is too high. Dr. Parran stated that the British army had between 3 and 4 doctors per 1000 soldiers, and added: "I am confident that the armed forces will reduce their demands for medical men for the sake of the civilian population."

IS THE NATIONAL PHYSICIANS' COMMITTEE WORTH WHILE? —

The semi-annual meeting of the trustees of the National Physicians' Committee was held in Chicago on November 18. The meeting was well attended, and the report of the accomplishments of the Committee was encouraging—indeed, inspiring.

Of chief interest was the nation-wide canvass of candidates for Congress. Reports tabulated from every state showed that of 883 candidates, 872 had been interviewed by doctors. More than 300 of the 435 members of the House of Representatives have pledged themselves to vote for legislation favorable to the medical profession and against legislation hostile to its interests. While the National Physicians' Committee is absolutely non-partisan, it is gratifying that apparently—indeed, obviously—it has considerable influence when it methodically undertakes to accomplish a worthy objective. It is of interest to note that Mr. Eliot, of Massachusetts, who at the request of the A. F. of L. introduced the bill to provide compulsory hospital insurance for the workers of America, was defeated for re-election.

Other activities of the National Physicians' Committee have been the nation-wide distribution of editorial matter giving the public the viewpoint of organized medicine, and a number of radio broadcasts. The most notable of these broadcasts were Mr. John M. Pratt's clear-cut exposition of the position of the medical profession in the world conflict, and the American Forum of the Air debate, "Is Compulsory Health Insurance in the Public Interest?", in which Drs. Cary and Fishbein represented the negative against Drs. Boas and Atkinson.

Those who have given their financial and moral support to the National Physicians' Committee have tangible evidence that their support has not been in vain. The pity is that so small a proportion of our profession, apparently, appreciate the value of this organization, which was created in response to the oft-repeated demand that organized med-

icine should do something to combat the systematic campaign to force upon this country the system of political medicine that originated in Russia and Germany.

From time to time statements to the medical profession are issued from the headquarters of the National Physicians' Committee. It is to be feared that most of these are not read by the average doctor. Not a single doctor in North Carolina—or in the United States—should fail to read the special bulletin based upon the recent congressional elections. It should convince the most skeptical that the National Physicians' Committee has amply justified its existence.

* * * *

NORTH CAROLINA'S QUOTA EXCEEDED

At the Annual Conference of Secretaries and Editors, Dr. Frank Lahey, Chairman of the Central Board of Procurement and Assignment, announced the proportion of doctors in service on October 31 from each state, as compared with the quota assigned for 1942. The figures given by him are to be found in this issue in the Department of Military Medicine (p. 658). It is gratifying that North Carolina has sent 163 per cent of her quota. Only six other states have given a larger percentage. This means that when and if (and there seems little need for the "if") additional doctors are needed for the armed forces, North Carolina and the other states that have exceeded their quotas will be given credit for this excess, while the states that have not supplied their allotted number will be expected to make up the deficit.

Dr. Lahey rather jestingly said that the charge had been made that the doctors of the Southern states could make more money in the army than in practice; but he dismissed this as slander. Certainly this charge could not be made of the great majority of volunteers from North Carolina. It is becoming more evident that to win this war will take the united efforts of the whole country. We of the Tar Heel State can take just pride in the contribution our profession has made.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

DR. FREDERIC HANES

and

DR. DOUGLAS H. SPRUNT

DR. HANES: The story is that of a 15 year old white schoolgirl, who came complaining of swelling of the abdomen and legs of three weeks' duration.

There was nothing in her *family history* of importance, and in her *past history* the only relevant detail was that of a "questionable Ludwig's angina" in 1940, which was incised and drained.

She was apparently quite well until her ankles and abdomen began to swell, some three weeks before admission. Since then she had felt somewhat weak and listless. There had been no indigestion, nausea or vomiting and no jaundice. The menses had begun one year ago and had been quite irregular; the last period was two months before admission. Some two weeks before admission she noticed the development of purplish striae on both breasts.

The *physical examination* merely served to confirm the patient's complaints; the legs and feet showed a one plus, pitting edema, and the abdomen was swollen with fluid. The rest of the examination was negative, the temperature, pulse and respirations being normal and the blood pressure 110 systolic, 70 diastolic. The liver and spleen were not felt.

The *accessory clinical findings* were of great interest, and the positive ones were these: (1) The blood showed a macrocytic hyperchromic anemia, with 3,400,000 red blood cells and a hemoglobin of 77 per cent; the hematocrit was 36 volume per cent, the mean corpuscular volume 106 cubic microns, and the color index 1.13. There were 4,500 white blood cells, with a normal differential count. (2) *Chemical examination* of the blood revealed the nonprotein nitrogen to be 26 mg. per 100 cc.; the van den Bergh reaction direct; bilirubin 2.2 mg. per 100 cc.; proteins 4.8 Gm. per 100 cc., the albumin being only 1.8 and the globulin 3 Gm. per 100 cc. (3) The galactose tolerance test of

liver function showed 3.5 Gm. excreted in five hours, and the bromsulfalein test showed a retention of 18 per cent. (4) Fourteen hundred cubic centimeters of fluid were removed by paracentesis. This was hazy and yellow in color, with a specific gravity of 1.010; there were 45 cells per cubic millimeter. The liver and spleen were not felt after paracentesis, although a flat x-ray plate revealed the spleen to be moderately enlarged.

Course in hospital. A high carbohydrate, low fat diet, with restriction of salts and fluids, was given, and at the end of her two weeks' stay a second paracentesis was done. She was advised to return for a splenectomy if her condition did not improve, and ten days after discharge she was readmitted.

The attending and ward physicians explained the very serious outlook to the girl's parents and offered splenectomy as a last and none too hopeful resort. With a full understanding of the dangers attending a splenectomy, the parents consented to the operation, which was advised purely to lessen the volume of blood in the portal circulation.

The patient was prepared for operation by three transfusions of undiluted plasma. On the fourth postoperative day the patient became very dyspneic, vomited large amounts of "coffee-ground" material, and expired.

Discussion

DR. HANES: Such are the facts furnished us and they point with great clearness to some form of *hepatitis*. The history is devoid of etiological data, unless one attaches significance to the infection designated "questionable Ludwig's angina" in 1940. Perhaps one should do this, since it seems to be the only pertinent fact in the past history.

The only diagnosis which adequately covers the clinical picture is cirrhosis of the liver, and this diagnosis was registered ante-mortem. There seems no reason to doubt that death was caused by a chronic, progressive fibrosis of the liver of the type called Laennec's cirrhosis, or portal cirrhosis. This disease is uncommon in the young, although far from being rare. Dr. George Harrell and Dr. Angus McBryde⁽¹⁾ have reported twenty instances of cirrhosis of the liver in chil-

1. Harrell, George T. and McBryde, Angus: Cirrhosis of the Liver in Children. *Am. J. Dis. Child.* 59:1301-1327 (June) 1940.

dren which they had studied personally, the patients ranging in age from a few months to 15 years. In the present instance none of the etiological factors enumerated by Harrell and McBryde can be evoked to explain the cirrhosis; obstruction to bile flow, infection, or intoxication by alcohol or the heavy metals cannot be proven.

I question the wisdom of the splenectomy as a therapeutic measure in this patient, although I realize the conditions under which it was advised. "Desperate diseases require desperate remedies," but the indications for splenectomy should be adhered to very rigidly, else a useful therapeutic measure will come into undeserved ill-repute. Without entering into the question of the functions of the spleen, upon which there is far from general agreement, we may say that splenectomy has proven useful, even curative, in the following conditions and *in no other*:

(1) Congenital hemolytic jaundice (spherocytosis). In the *congenital* form of this malady splenectomy is usually brilliantly successful, but it is not so successful in the *acquired* form.

(2) Thrombopenic purpura. In properly selected cases splenectomy usually cures the condition of thrombopenia, and the purpura ceases.

(3) In the *early* phase of the syndrome produced by obstruction to the splenic vein—so-called Banti's disease or splenic anemia—, ligation of the splenic vein, or splenectomy, sometimes stops the gastric or esophageal hemorrhages which characterize the syndrome.

(4) In the rare lipoidosis, or reticulo-endotheliosis of childhood called Gaucher's disease, splenectomy has been reported to be of service.

A curious observation in this patient was striae on the breasts and buttocks, similar to the striae of pregnancy, or to those seen in Cushing's syndrome. Harrell and McBryde record a similar condition in one of their patients, a girl of 16, and I have recently seen such atrophic striae on the back and elbows of a colored boy of 15, suffering from rheumatic fever. I have no explanation of this phenomenon.

Dr. Hanes's Diagnosis

Laennec's cirrhosis of the liver.

Anatomical Report

DR. SPRUNT: The body, that of a 15 year old girl, was very well nourished and fully developed for her age. The liver weighed 1000 Gm., which was several hundred grams less than one would expect. It was yellow and the surface was quite nodular; some of the nodules were jaundiced. Microscopic study showed the typical liver of Laennec's cirrhosis. There was rather extensive periportal fibrosis and irregular nodules of regenerating hepatic cells. Many of the liver cells contained fat.

The spleen weighed 450 Gm., which is well over twice its normal size. Microscopic study of the spleen showed marked congestion and considerable fibrosis. The vessels around the junction of the esophagus and stomach were greatly dilated, but none was found ruptured. Around this region a considerable amount of old blood was found. It is thought that a varix was ruptured. These are very difficult to find at autopsy. The duodenum was bile stained. All the organs in the body showed some jaundice.

The lungs showed no focal areas of lobular pneumonia grossly, but microscopic study revealed a diffuse mononuclear pneumonia, with many of the macrophages containing lipid material. It is thought that this reaction represented a postoperative aspiration of lipoidal materials.

Anatomical Discussion

DR. SPRUNT: The case anatomically represents a typical case of Laennec's cirrhosis with obstruction of return of blood through the portal vein and resultant enlargement of the spleen, ascites and edema. The jaundice was also the result of partial obstruction of the biliary system due to the fibrosis and to swelling of the hepatic cells. This obstruction was incomplete, as was evidenced by the bile in the duodenum.

Although this case has the morphological characteristics of Laennec's cirrhosis, which current opinion⁽²⁾ attributes to dietary deficiency, we do not believe that diet played any great part in its production, since the body was so well nourished and well developed. We are in agreement with Dr. Hanes that the Ludwig's angina possibly played a part in its production.

2. Dietary Hepatic Cirrhosis, Editorial, J. A. M. A. 120:624 (Oct. 24) 1942.

Anatomical Diagnosis

Cirrhosis (Laennec's) of the liver
Enlarged and fibrotic spleen, peripheral edema
Diffuse mononuclear pneumonia (aspiration)

CLINICO-PATHOLOGICAL
CONFERENCE

CITY MEMORIAL HOSPITAL
WINSTON-SALEM

Presentation of Case

J. B. McA., a 45 year old negro man, was admitted to the Kate Bitting Reynolds Hospital on November 2, 1941, with the chief complaint of pain in the left side. His present illness began two years ago with a gradual onset of lower back pain. He had occasional attacks of anorexia with nausea and vomiting. There had also been a gradual development of partial paralysis on the left side, with numbness and tingling in his legs. He had noted increased headaches, insomnia and nervousness. In the four days prior to admission the back pain became increasingly severe. Marked mental confusion was present, on admission.

The family history elicited only "kidney trouble" in an uncle. The past history revealed treatment for gonorrhea and syphilis some years previously, and an "operation" for buboes. He indulged in excessive smoking and drinking. The systemic review gave no symptoms referable to cardiac insufficiency or pulmonary disease. The patient suffered from constipation and some nocturia (twice nightly).

The physical examination on admission revealed a poorly nourished man appearing chronically ill. The temperature was 98.4 F., the pulse 88, and the respirations 24. There was poor oral hygiene and almost complete adentia. The turbinates were inflamed and there was a purulent exudate and postnasal drip. The scleras were muddy and there was an arcus senilis. The skin was dry and slightly scaly over the extremities. Examination of the chest showed wasting of subcutaneous tissues, more marked on the left. The lungs were clear. The heart was not enlarged to percussion but there was a to and fro murmur audible over the whole precordium, loudest at the apex. Rhythm and

rate were normal. The blood pressure was 160 systolic, 120 diastolic in the right arm and 180 systolic, 120 diastolic in the left arm. The abdomen was doughy and diffusely tender, but no masses or organs were palpable. The extremities showed a partial spastic paralysis with depression of tendon reflexes and a suggestive Babinski reaction on the left. There was some impairment of sensation. Rectal examination showed an enlarged, somewhat hard prostate.

The laboratory work on admission showed 5,450,000 red blood cells with a hemoglobin of 12 Gm. The white cell count was 10,850 with 87 per cent granulocytes. The blood nonprotein nitrogen was 120 mg. per 100 cc., the creatinine 5.4 mg. per 100 cc., and the sugar 133 mg. per 100 cc. Two Kline tests, given four days apart, were negative. The urine was cloudy, greenish brown, and neutral, with a specific gravity of 1.020. There was a 2 plus reaction for albumin, no sugar, and no formed elements. The nonprotein nitrogen continued to rise, reaching a level of 300 mg. per 100 cc. just before death. At this time the carbon dioxide combining power was 56 mg. per 100 cc.

An x-ray of the chest showed normal lungs and diaphragm. The heart was slightly enlarged to the left. The aorta was dilated, and an aneurysm was found in the ascending portion. Therapy consisted of nicotinic acid, brewers' yeast and hydrochloric acid. The patient was given isotonic subcutaneous fluids and intravenous hypertonic glucose. Diuretin and potassium acetate were also used.

The patient's course in the hospital was progressively downhill, and he died five days after admission. He had urinary incontinence, and excreted increasingly small amounts of urine. He was somewhat euphoric and disoriented. There was a transient attack of hiccoughs.

Discussion

DR. E. B. BROOKS: I believe that this man probably had a chronic nephritis or nephrosis and that he was in an advanced stage of uremia on admission. The high nonprotein nitrogen and small amount of concentrated urine fit this diagnosis of uremic coma. He certainly had hypertensive cardiovascular disease and possibly had had a cerebral thrombosis, all secondary to chronic nephritis. The history of syphilis fits in with the

observed aneurysm. The pains in the lower back were likely due to this aneurysm (luetic or dissecting). The murmur over the precordium was also probably due to the aneurysm or to aortic valvular disease, mitral stenosis, or vegetations on the valves.

Clinical Diagnosis

Carcinoma of the prostate with extension to ureters, obstruction of ureters and uremia.
Aortic aneurysm.

Dr. Brooks's Diagnosis

Chronic nephritis or nephrosis, with uremia.
Hypertensive heart disease.
Aortic aneurysm.

Anatomical Diagnosis

Hemorrhage into psoas muscle with extension into retroperitoneal tissues.
Benign enlargement of prostate.
Cardiac hypertrophy.
Arteriosclerosis of aorta.
Congestion of lungs.
Aortic aneurysm.
Acute prostatitis.
Mild chronic interstitial nephritis.

Pathological Discussion

DR. T. T. FROST: The first thing I saw on opening the abdomen was a large retroperitoneal hemorrhage, more extensive on the left than on the right. There was no abscess anywhere and no injury to the vessels. Several cavities in the psoas muscle were filled with blood that oozed out into the peritoneal cavity. There was an aneurysm due to severe atheromatous change in the aorta. It was not a syphilitic aneurysm, but one secondary to medionecrosis. There was marked dilatation of the whole aorta. There was no valvular lesion, but a dilated aortic valve.

Grossly the prostate was enlarged and firm, and on section showed merely a diffuse fibrous enlargement. The bladder was not particularly thick-walled. There was a little injection of the trigon. The kidneys were normal in size. The lungs did not show any striking changes. I did not open the head, so I do not know what the brain showed.

Microscopically the surface of the kidneys was a little irregular. Microscopic examination of a section of the kidneys showed dilated tubules and glomeruli. In addition there

were cellular solid areas which, under high power, proved to be areas of inflammation. There was sclerosis of the small arterioles which was not very severe, and very little chronic kidney damage. The glomeruli were fairly free of thickening. There was distention of the glomeruli and some interstitial inflammatory reaction. The small arterioles showed a considerable degree of thickening. The patient had very mild arteriolar disease.

Microscopically the prostate showed an acute inflammatory reaction with destruction of numerous small areas. There was a prostatic abscess. Sections from the psoas muscle along the hemorrhage showed nothing but blood clot. Some of the vessels showed severe hyalinization and necrosis of the wall. The hemorrhage was caused by uremia. There was some thickening of the vessels and very marked degenerative changes of the wall. The wall had lost completely its normal structures.

MEDICOLEGAL ABSTRACT

J. F. Owen, M. D., LL. B.

Raleigh

Evidence: Opinion testimony of experts is admissible only in cases of necessity, such as where facts in issue require some explanation, or some deduction therefrom by persons who have scientific knowledge or experience.

This is a case in which an infant, through her next friend, entered suit to recover damages for a personal injury alleged to have been caused by the negligence of the defendants in the operation of an automobile. The evidence tended to show that on July 18, 1941, the plaintiff, a child of 8 years, was riding in an automobile driven by her father; that the automobile in which she was riding was struck by another automobile proceeding in the opposite direction, this car being driven by the defendants at a high rate of speed; that in attempting to negotiate a sharp curve, the automobile operated by the defendants swerved and struck the car in which the plaintiff was riding; and that as a result the plaintiff fell from the seat to the floor of the automobile. It was further made to appear that previously—on July 5, 1941—the child had accidentally broken her left arm above the elbow, and that at the time of the collision the fractured bone had been set, and was then held in position by a plaster cast. It was contended by the plaintiff that as a consequence of the fall in the automobile, due to the collision, the cast was broken; that it was subsequently discovered that the fractured ends of the bone in the plaintiff's arm had separated; and that an operation was necessary, and a permanent injury resulted.

The defendants' evidence tended to show the absence of negligence on their part, and it was further contended that the plaintiff's evidence failed to show that the separation of the ends of the fractured bone in the plaintiff's arm was caused by the collision,

and that upon failure of proof of this fact, the plaintiff could not maintain her case.

The defendants' motion for judgment of nonsuit was denied. Issues were submitted to the jury, and a verdict was rendered for the plaintiff, establishing negligence and awarding substantial damages. From a judgment on the verdict thus rendered, the defendants appealed.

When this case came on to be considered by the Supreme Court, it was the opinion of the court that there was error in allowing certain evidence given by a doctor for the plaintiff. In answer to a question as to what caused the dislocation of the bones, the physician replied as follows: "I know the accident did it, or whatever occurred." It was the court's opinion that allowing this type of testimony to be considered by the jury was taking the question out of their hands, and attempting to decide something for the jury which it was their duty to decide for themselves. The court also stated that "while it has been frequently held that expert testimony should be excluded when it invades the province of the court or jury, or when it expresses an opinion on the very issues of fact before the jury, this rule is not inflexible, and is subject to exceptions—for example, the opinion of the physician as to the cause of death, sanity, prognosis of disease or injury, and as to the ultimate facts in regard to science, art, or skill." In this particular instance, the court ruled that the physician could have given the probable causes, or given an opinion that the accident could have caused the dislocation of the bones, but it was held to be improper for the evidence to go in with a definite statement that the accident itself caused the separation of the bones. This was a question for the jury to decide, and as a consequence, the court ordered a new trial.

This case illustrates the limitations of expert opinion testimony. It is allowed only in explanation of some fact in issue before the jury. It might be wise at this time to call attention to another type of testimony, called expert testimony of fact, which has a greater latitude, and includes actual knowledge of some specialized type of endeavor. (Vol. 222, page 1. Decision rendered Fall Term, 1942.)

Ciba Awarded Minute Man Flag

In recognition of more than 95 per cent participation in the federal payroll savings plan, a Minute Man flag has been presented to the Ciba Pharmaceutical Company of Summit, N. J. by the United States Treasury Department War Savings Staff.

The presentation was made by W. H. Hassinger, Deputy Administrator of the War Savings Staff, and a speech of acceptance was delivered by J. J. Brodbeck, Executive Vice-President and General Manager of Ciba.

Exigency of War

Oleum Percomorphum 50% is now known as Oleum Percomorphum 50% With Viosterol. The potency remains the same—namely, 60,000 vitamin A units and 8,500 vitamin D units per gram. It consists of the liver oils of percomorph fishes, viosterol, and fish liver oils, a source of vitamins A and D in which not less than 50% of the vitamin content is derived from the liver oils of percomorph fishes (principally *Xiphias gladius*, *Pneumatophorus diego*, *Thunnus thynnus*, *Stereolepis gigas*, and closely allied species).—Mead Johnson & Co., Evansville, Ind.

MILITARY MEDICINE

NORTH CAROLINA PHYSICIANS COMMISSIONED IN THE ARMED FORCES

(As of November 1, 1942)

The following is a list of North Carolina physicians serving in the armed forces of the country, compiled from the records in the State Office of Procurement and Assignment and in the office of the Secretary of the State Society. Physicians marked with an asterisk are members of the Medical Society of the State of North Carolina; (A) indicates that they are serving with the army, (N) that they are with the navy.

Name	Address	County
*Allen, A. L.	Roxboro	Person
*Anderson, E. C. (A)	Wilmington	New Hanover
*Anderson, J. B.	Asheville	Buncombe
*Andes, T. E. (A)	Leaksville	Rockingham
*Apple, E. D. (A)	Greensboro	Guilford
*Armentrout, C. H. (N)	Asheville	Buncombe
*Armistead, D. B. (A)	Greenville	Pitt
*Arnold, R. A. (A)	Durham	Durham
*Aycock, E. B. (A)	Greenville	Pitt
*Bacon, H. L. (A)	Bryson City	Swain
*Ballard, T. F. (A)	Charlotte	Mecklenburg
Bandy, W. H. (A)	Lincolnton	Lincoln
Barber, J. F. (N)	Asheville	Buncombe
*Barefoot, W. F. (A)	Wilmington	New Hanover
Barnes, B. C. (A)	Greensboro	Guilford
*Barnes, H. E., Jr. (A)	Hickory	Catawba
Barringer, Archie (N)	Mount Pleasant	Cabarrus
*Baxley, R. D. (A)	Washington	Beaufort
*Benbow, E. V. (A)	Winston-Salem	Forsyth
*Benbow, J. T. (A)	Winston-Salem	Forsyth
*Bender, J. (A)	Red Springs	Robeson
Bennett, Van B. (A)	Burnsville	Yancey
*Benson, N. O. (A)	Lumberton	Robeson
*Benton, G. R., Jr.	Goldsboro	Wayne
*Benton, W. J.	Greensboro	Guilford
Biddle, R. M.	Durham	Durham
*Biggs, J. I. (A)	Lumberton	Robeson
Bittinger, C. L. (A)	Mooreville	Iredell
*Black, P. A. L.	Wilmington	New Hanover
*Blair, J. S. (A)	Gastonia	Gaston
*Bland, C. A.	Forest City	Rutherford
*Blumberg, A.	Asheville	Buncombe
*Bolus, M. (A)	Raleigh	Wake
*Boney, E. R. (A)	Kinston	Lenoir
*Bostic, W. C. Jr. (A)	Forest City	Rutherford
*Bradford, G. E. (N)	Winston-Salem	Forsyth
*Bradley, H. J.	Brevard	Transylvania
Breeden, W. H. (A)	Fayetteville	Cumberland
*Brewton, W. A.	Enka	Buncombe
*Bridges, D. T. (A)	Lattimore	Cleveland
*Briggs, H. H., Jr. (A)	Asheville	Buncombe
*Britt, C. S.	Charlotte	Mecklenburg
*Brooks, E. B. (A)	Winston-Salem	Forsyth
*Brookshire, H. G., Jr.	Asheville	Buncombe
*Brown, C. E. (N)	Chapel Hill	Orange
*Brown, J. S., Jr.	Hendersonville	Henderson
Brown, J. W. (A)	Gatesville	Gates
*Brown, L. G.	Southport	New Hanover
*Brown, W. M. B. (A)	Greenville	Pitt
Brownlee, R. E.		
*Brunson, E. P. (A)	Albemarle	Stanly
*Bumgarner, J. (Reported lost in action in Pacific)	North Wilkesboro	Wilkes
*Bunch, C. (N)	Charlotte	Mecklenburg
*Bunn, J. H., Jr.	Smithfield	Johnston
*Bunn, R. W. (A)	Winston-Salem	Forsyth

Name	Address	County	Name	Address	County
*Bunts, R. C.	Asheville	Buncombe	*Fleming, R. G. (A)	Durham	Durham
*Burwell, J. C., Jr. (A)	Greensboro	Guilford	*Floyd, A. G. (A)	Whiteville	Columbus
*Byerly, J. H. (A)	Sanford	Lee	*Flythe, W. H. (A)	High Point	Guilford
Byrd, A. L. (A)	Leaksville	Rockingham	*Forrest, D. E. (A)	Hillsboro	Orange
*Byrnes, T. H.	Charlotte	Mecklenburg	Forth, P. T. (A)	Durham	Durham
*Calder, D. G., Jr. (A)	Concord	Cabarrus	*Fox, D. B. (A)	Greensboro	Guilford
*Cannon, E. G.	Hope Mills	Cumberland	*Fox, H. J. (N)	Durham	Durham
*Cannon, E. B. (A)	Asheboro	Randolph	*Fox, N. A.	Guilford College	Guilford
*Carlyle, J. B. (A)	Burlington	Alamance	*Frazier, J. W., Jr. (A)	Salisbury	Rowan
Carpenter, F. L. (A)	Statesville	Iredell	*Fritz, W. A. (A)	Hickory	Catawba
*Carrington, S. M. (A)	Oxford	Granville	*Fuller, H. F. (A)	Kinston	Lenoir
Carter, P. C. (A)	Madison	Rockingham	*Furgurson, E. W. (A)	Plymouth	Washington
*Cekada, E. B. (A)	Durham	Durham	*Gardner, C. E., Jr. (N)	Durham	Durham
*Chadwick, W. S. (N)	Beaufort	Carteret	*Garrard, R. L. (A)	Greensboro	Guilford
Chandler, W. P. (A)	Morganton	Burke	*Garrenton, C. G. (A)	Bethel	Pitt
*Cherry, J. H. (A)	Asheville	Buncombe	Gatling, R. R. (N)	Gates	Gates
Chesson, A. L.	Elizabeth City	Pasquotank	*Gay, C. H. (A)	Charlotte	Mecklenburg
*Chiles, G. G. (A)	Sanford	Lee	*Gillespie, S. C.	Asheville	Buncombe
*Clapp, H. L.	Swannanoa	Buncombe	*Glascock, H. W.	Raleigh	Wake
*Cloginger, K. L. (A)	Conover	Catawba	*Glasser, J. W. H. (A)	Graham	Alamance
*Cogdell, D. M.	Fayetteville	Cumberland	*Goley, W. C.	Graham	Alamance
Coleman, R. S. (A)	Lumberton	Robeson	Gorfine, Morris	Pinehurst	Moore
*Cooley, S. S.	Black Mountain	Buncombe	*Goswick, H. W. Jr. (A)	Winston-Salem	Forsyth
*Cornell, W. S.	Charlotte	Mecklenburg	*Grady, F. M. (A)	Mooreville	Iredell
Corpening, A. E. (A)	Granite Falls	Caldwell	*Graham, C. (N)	Wilmington	New Hanover
*Corwin, W. C. (A)	Greensboro	Guilford	Greene, C. C. (N)	Wadesboro	Anson
*Cox, A. McN. (A)	Madison	Rockingham	*Greene, J. V. (A)	Fayetteville	Cumberland
*Cox, S. C. (A)	Kerr	Sampson	Griffin, H. W. (N)	Hickory	Catawba
*Cozart, B. F. (A)	Reidsville	Rockingham	*Griffis, J. W.	Denton	Davidson
*Craig, R. L. (A)	Durham	Durham	*Haar, F. B. (A)	Greenville	Pitt
*Cranz, O. W. (A)	Kinston	Lenoir	*Hall, E. M., Jr. (A)	Raleigh	Wake
*Craven, E. B., Jr. (A)	Lexington	Davidson	*Hammond A. F., Jr. (A)	Gritton	Pitt
*Craven, F. T. (A)	Concord	Cabarrus	*Hamrick, J. C. (N)	Shelby	Cleveland
*Craven, T.	Huntersville	Mecklenburg	*Harden, B. (A)	Burlington	Alamance
*Cree, M. B.	Concord	Cabarrus	*Hardin, P. C.	Monroe	Union
*Creech, L. U. (A)	High Point	Guilford	*Harding, B. H. (A)	Yadkinville	Yadkin
*Crispell, R. S. (N)	Durham	Durham	*Harmon, R. H. (A)	Boone	Watauga
Cromartie, W. J. (A)	Elizabethtown	Bladen	*Harney, J. N. (A)	High Point	Guilford
*Croom, R. DeV., Jr.	Maxton	Robeson	*Harrill, H. C. (A)	Greensboro	Guilford
*Crump, C. L.	Asheville	Buncombe	*Harris, I. E., Jr. (A)	Durham	Durham
*Currie, D. S., Jr.	Fayetteville	Cumberland	*Harrison, E. T. (A)	High Point	Guilford
Daniel, L. S. (A)	Bailey	Nash	*Hart, O. J.	Winston-Salem	Forsyth
*Davis, J. P.	Winston-Salem	Forsyth	*Hartman, B. H. (A)	Asheville	Buncombe
*Davis, P. B. (A)	High Point	Guilford	*Harton, R. A. (A)	Durham	Durham
*Dawson, A. R. (A)	Greensboro	Guilford	*Hawes, G. A. (A)	Charlotte	Mecklenburg
Deaton, P. M. (N)	Statesville	Iredell	*Hawes, J. B. (A)	Greenville	Pitt
*DeCamp, A. L.	Fayetteville	Cumberland	Haywood, H. B., Jr.	(A)	Raleigh
*Dees, D. A. (Hon.)	Bayboro	Pamlico			Wake
*Denholm, J. S.	Burlington	Alamance	*Helms, J. B. (A)	Morganton	Burke
*Deyton, J. W.	Asheville	Buncombe	*Helsabeck, B. A. (A)	Winston-Salem	Forsyth
Dorsett, F. I. (A)	Winston-Salem	Forsyth	*Herring, T. (A)	Wilson	Wilson
*Dougherty, J. H. (A)	Asheville	Buncombe	*Hickman, H. S. (A)	Lenoir	Caldwell
*Dryden, J. S.	Raleigh	Wake	*Hill, A. LeC (A)	Kings Mountain	Cleveland
*Dula, F. M. (N)	Lenoir	Caldwell	*Hitch, J. M.	Raleigh	Wake
Dyer, S. G. (A)	Washington	Beaufort	*Holbrook, J. S. (A)	Statesville	Iredell
*Eckbert, W. F. (A)	Crossnore	Avery	*Holladay, L. W. (A)	High Point	Guilford
*Edmondson, F., Jr. (A)	Tarboro	Edgecombe	*Hooker, J. S. (A)	Chapel Hill	Orange
*Elfmott, S. L. (A)	Fayetteville	Cumberland	*Horack, H. M. (A)	Durham	Durham
*Elliott, J. C. (A)	Oxford	Granville	Howell, L. J. (A)		
*Erickson, C. C. (A)	Durham	Durham	*Hubbard, F. C. (A)	North Wilkesboro	Wilkes
*Faison, T. G. (A)	Winton	Hertford	*Hudgins, H. A. (A)	Rutherfordton	Rutherford
*Fales, R. (A)	Wilmington	New Hanover	Hunter, J. F. C.	Magnolia	Duplin
*Falls, F. (A)	Lawndale	Cleveland	Hunter, S. B., Jr.	Magnolia	Duplin
*Farmer, W. D. (A)	Greensboro	Guilford	*Hunter, W. B.	Lillington	Harnett
*Farrington, J. A. J.	Thomasville	Davidson	*Jacobs, J. E. J. (A)	Charlotte	Mecklenburg
*Fay, O. F.	Wilmington	New Hanover	Jamison, E. C.		
*Feezor, C. N. (A)	Mooreville	Iredell	Jervey, A. J., Jr.	(Killed in action in Pacific)	
*Felton, R. L., Jr. (A)	Carthage	Moore			
*Fenner, E. F.	Henderson	Vance	*Jervey, W. St. J. (A)	Tryon	Polk
*Fields, J. A.	Raleigh	Wake	*Johnson, G. F. (A)	Leaksville	Rockingham
*Fisher, E. W. (A)	Durham	Durham	*Jones, O. H. (A)	Charlotte	Mecklenburg
*Fleming, L. E. (A)	Charlotte	Mecklenburg	*Jones, R. O. (A)	Burnsville	Yancey
			*Jones, T. T. (A)	Durham	Durham

Name	Address	County	Name	Address	County
*Kapp, C. H. (A)	Winston-Salem	Forsyth	*Mitchell, R. H. (A)	Gastonia	Gaston
*Kavanaugh, W. P. (A)	Cooleemee	Davie	*Mock, C. G. (A)	Salisbury	Rowan
*Kendall, J. H. (A)	Richlands	Onslow	*Montgomery, J. C. (A)	Charlotte	Mecklenburg
*Kennedy, L. T.	Winston-Salem	Forsyth	*Moore, E. V. (A)	Earl	Cleveland
*Ketchie, J. M. (A)	Salisbury	Rowan	*Moore, H. B.	Graham	Alamance
*Killian, F. McC. (A)	Franklin	Macon	*Moore, R. H. (A)	Canton	Haywood
*Kirchberg, Roy (A)	Sylva	Jackson	*Moorefield, R. H. (A)	North Kannapolis	Rowan
*Knoefel, A. E., Jr. (A)	Black Mountain	Buncombe	Morris, T. A., Jr. (N)	Hamlet	Richmond
*Lackey, R. H.	Fayetteville	Cumberland	*Munroe, H. S., Jr. (A)	Charlotte	Mecklenburg
*Lackey, W. J. (A)	Failston	Cleveland	*Murphy, G. W. (A)	Asheville	Buncombe
Lambert, C. F. (A)	Spruce Pine	Mitchell	*Myers, H. T. (A)	Lexington	Davidson
*Lancaster, F. W. (A)	Lexington	Davidson	*Naumoff, P. (A)	Charlotte	Mecklenburg
*Lancaster, N. F. (A)	Waynesville	Haywood	*Newland, C. L. (A)	Brevard	Transylvania
*Lanier, V. C. (A)	Welcome	Davidson	Newman, George (A)	Murphy	Cherokee
*Lapsley, A. F.	Badin	Stanly	*Norfleet, C. M., Jr. (A)	Winston-Salem	Forsyth
Large, H. L., Jr. (A)	Rocky Mount	Edgecombe	*Norton, J. W. R. (A)	Chapel Hill	Orange
		Nash	*Nowlin, G. P. (N)	Charlotte	Mecklenburg
*Lassiter, W. H., Jr. (A)	Selma	Johnston	*Odom, R. T. (A)	Winston-Salem	Forsyth
*Lawson, G. W.	Graham	Alamance	*Ogburn, L. C. (A)	Winston-Salem	Forsyth
*LeBauer, M. L. (A)	Greensboro	Guilford	*Oliver, J. A. (A)	Rockwell	Rowan
LeGrand, R. A. (N)	Wadesboro	Anson	*Osborne, J. E.	Rosman	Transylvania
Lewellyn, J. T. (A)	Williamston	Martin	*Owen, D. S. (A)	Fayetteville	Cumberland
*Lewis, W. G.	Stokesdale	Guilford	*Padgett, C. K. (A)	Shelby	Cleveland
*Lihn, H. (A)	Fairmont	Robeson	*Padgett, P. G. (A)	Kings Mountain	Cleveland
*Lohr, D. (N)	Lexington	Davidson	*Parker, S. F. (A)	Shelby	Cleveland
Long, T. W. (A)	Newton	Catawba	*Parks, W. C., Jr.	High Point	Guilford
Long, W. M. (A)	Mocksville	Davie	*Parrette, R. G. (A)	Andrews	Cherokee
*Lore, R. E. (A)	Lenoir	Caldwell	*Parrott, J. A. (N)	Kinston	Lenoir
*Lott, W. C. (A)	Asheville	Buncombe	*Pate, A. H. (N)	Goldsboro	Wayne
*Lyon, B. R. (A)	Greensboro	Guilford	*Patterson, F. G. (A)	Chapel Hill	Orange
*MacRae, J. D. (A)	Asheville	Buncombe	Paterson, R. D. (A)	Liberty	Randolph
*Manning, I. H., Jr. (A)	Durham	Durham	*Patton, W. H., Jr. (A)	Morganton	Burke
*Markham, B. (A)	Durham	Durham	*Peacock, R. M. (N)	Weaverville	Buncombe
*Marshall, J. F. (A)	Winston-Salem	Forsyth	*Pearse, R. L. (N)	Durham	Durham
*Martin, B. F. (A)	Winston-Salem	Forsyth	*Pearson, A. A. (A)	Fletcher	Buncombe
*Martin, L. P.	Mocksville	Forsyth	*Peasley, E. D.	Raleigh	Wake
*Martin, W. F. (A)	Charlotte	Mecklenburg	*Perry, G. G. (A)	High Point	Guilford
*Matros, N. H.	Oteen	Buncombe	*Persons, E. L. (A)	Durham	Durham
*Matthews, B. B. (A)			*Peters, D. B.	Raleigh	Wake
(Died from natural causes while in the service of his country)	Shelby	Cleveland	*Phelps, J. M. (A)	Creswell	Washington
*Matthews, W. C. (A)	Davidson	Mecklenburg	*Pittman, W. A. (A)	Fayetteville	Cumberland
Matthews, W. L. (N)	Asheboro	Randolph	*Pitts, W. R. (A)	Charlotte	Mecklenburg
*Mauzy, C. H., Jr. (A)	Winston-Salem	Forsyth	*Plummer, D. E.	Durham	Durham
*May, W. P.	Winston-Salem	Forsyth	Plyler, R. J. (A)	Salisbury	Rowan
*McCall, Robert (A)	Charlotte	Mecklenburg	*Pollack, D.	Hobgood	Halifax
*McCracken, J. P. (A)	Durham	Durham	*Poole, M. B. (A)	Dunn	Harnett
*McCracken, M. H. (A)	Asheville	Buncombe	Pope, S. A. (A)	Beulaville	Duplin
*McCutcheon, W. B. (A)	Durham	Durham	*Powell, H. S. (A)	Gastonia	Gaston
*McDonald, A. M. (N)	Charlotte	Mecklenburg	Powers, J. S. (A)	Fontana	Swain
*McDonald, L. B. (A)	Hendersonville	Henderson	*Price, H. H. (A)	Draper	Rockingham
*McDonald, R. L. (A)	Thomasville	Davidson	*Propst, J. H. (A)	Graham	Alamance
*McDowell, H. C. (A)	Winston-Salem	Forsyth	Query, L. W., Jr. (A)	Charlotte	Mecklenburg
*McFayden, O. L., Jr.			*Query, R. Z., Jr. (A)	Charlotte	Mecklenburg
(A)	Fayetteville	Cumberland	*Rand, E. G. (A)	Raleigh	Wake
*McGrath, F. B. (A)	Lumberton	Robeson	*Reavis, C. W.	Kinston	Lenoir
*McGuffin, W. C.	Asheville	Buncombe	*Redwine, J. D. (A)	Lexington	Davidson
*McIntosh, D. M., Jr.			Reece, J. C. (A)	Newton	Catawba
(A)	Marion	McDowell	*Register, J. F. (A)	Greensboro	Guilford
*McKee, J. S., Jr. (A)	Morganton	Burke	*Reque, P. G. (A)	Durham	Durham
*McKee, L. M. (A)	Durham	Durham	*Richie, R. F.	Raleigh	Wake
*McLaughlin, C. S., Jr.	Charlotte	Mecklenburg	*Robertson, F. (Hon.)		
*McLeod, N. H., Jr. (A)	Raleigh	Wake	(A)	Durham	Durham
*McManus, H. F., Jr.			*Roberts, L. C. (A)	Durham	Durham
(A)	Raleigh	Wake	*Roberts, R. F.	Asheville	Buncombe
*McNeill, J. H. (N)	North Wilkesboro	Wilkes	*Robertson, C. B.	Jackson	Halifax
*Meriwether, B. M.	Asheville	Buncombe	*Robertson, E. M. (N)	Durham	Durham
*Merritt, J. F. (A)	Greensboro	Guilford	*Robertson, J. N. (A)	Fayetteville	Cumberland
*Mickle, J.	Tabor City	Columbus	*Robertson, L. H. (A)	Salisbury	Rowan
Miller, R. P. (A)	Lincolnton	Lincoln	*Robinson, J. L. (A)	Gastonia	Gaston
*Mills, C. R. (A)	Greensboro	Guilford	*Rodman, R. B.	Wilmington	New Hanover
Mills, Wardell (N)			*Rogers, G. W.	Chapel Hill	Chatham
*Mitchell, L. P., Jr. (A)	Spindale	Rutherford	*Rollins, C. D. (A)	Henderson	Vance
			*Rollins, V. B. (A)	Henderson	Vance
			*Roper, W. H. (A)	Sanatorium	Hoke

Name	Address	County	Name	Address	County
*Rosenbaum, M. M.	Shallotte	New Hanover	*Tyson, J. J. (A.)	Ayden	Pitt
*Ross, R. A. (N)	Durham	Durham	*Tyson, T. D., Jr. (A.)	High Point	Guilford
*Ross, T. W. (N)	Charlotte	Mecklenburg	*Tyson, W. W. (A.)	Mebane	Alamance
*Royster, C. L. (A.)	Raleigh	Wake	*Upchurch, T. G. (A.)	Smithfield	Johnston
*Royster, J. D. (A.)	Colerain	Bertie	*Wall, R. E. (A.)	Siler City	Chatham
*Ruark, R. J. (A.)	Raleigh	Wake	*Walton, C. L. (A.)	Glen Alpine	Burke
*Rubin, A. S. (A.)	Greensboro	Guilford	*Ward, N. E. (A.)	Greenville	Pitt
*Rudd, J. C.	Greensboro	Guilford	*Ward, W. E. (A.)	Robersonville	Martin
*Rudd, P. D. (A.)	Reidsville	Rockingham	*Warwick, H. C. (A.)	Greensboro	Guilford
*Rude, J. C. (A.)	Durham	Durham	*Washburn, C. Y. (A.)	Mooresboro	Cleveland
*Ruffin, D. W.	Pink Hill	Lenoir	*Washuer, S. E.	Wilmington	New Hanover
*Ruffin, J. B. (A.)	Ahoskie	Hertford	*Waters, G. E. (A.)	Raleigh	Wake
*Russell, W. M. (N)	Asheville	Buncombe	*Way, S. E. (A.)	Rocky Mount	Edgecombe
*Sader, J. (A.)	Brevard	Transylvania			Nash
*Sanger, W. P. (A.)	Charlotte	Mecklenburg	Weathers, R. O. (A.)	Goldsboro	Wayne
*Schoonheit, E. W.	Asheville	Buncombe	Weaver, J. B. (A.)		
*Schulze, W. (A.)	Durham	Durham	*Weinstein, M. H. (A.)	Fairmont	Robeson
*Shelburne, P. A. (A.)	Greensboro	Guilford	*Westcott, W. E.	Candler	Buncombe
*Shepard, Karl (A.)	High Point	Guilford	*Westmoreland, J. R.		
*Shuford, J. H. (A.)	Hickory	Catawba	(N)	Canton	Haywood
*Sikes, C. H.	Greensboro	Guilford	*Whaley, J. D. (A.)	Hickory	Catawba
*Sinclair, L. G. (N)	Raleigh	Wake	*Wharton, C. W.	Smithfield	Johnston
*Sinclair, R. T., Jr.	Whiteville	Columbus	*Whicker, M. E. (A.)	China Grove	Rowan
*Skinner, L. C., Jr. (A.)	Greenville	Pitt	*White, T. P. (A.)	Charlotte	Mecklenburg
*Sloan, W. S. (A.)	Wilson	Wilson	*Whittington, C. T. (A.)	Greensboro	Guilford
*Smith, D. W. (A.)	Waynesville	Haywood	*Whitworth, J. M. (A.)	Morganton	Burke
*Smith, E. B.	Elizabeth City	Pasquotank	*Willard, S. B.	Raleigh	Wake
*Smith, J. G. (A.)	Rocky Mount	Edgecombe	*Williams, C. F. (A.)	Raleigh	Wake
		Nash	*Williams, J. D., Jr.		
*Smith, O. N. (A.)	Greensboro	Guilford	(A)	Stokesdale	Guilford
*Smith, R. C. (A.)	Ayden	Pitt	*Williams, McC. (A.)	Charlotte	Mecklenburg
*Smith, R. E. (A.)	Mt. Airy	Surry	*Williams, S. H. (A.)	Greenville	Pitt
*Smith, R. M. (A.)	Greensboro	Guilford	*Willis, C. A. (A.)	Candler	Buncombe
*Sowers, R. G. (A.)	Jonesboro	Lee	*Wilson, F., Jr. (A.)	Raleigh	Wake
*Sox, C. C.	Kenly	Johnston	*Wilson, G. D.	Kernersville	Forsyth
*Stelling, R. N. (A.)	Greensboro	Guilford	*Wilson, S. A.	Lincolnton	Lincoln
*Stenhouse, H. M.	Goldsboro	Wayne	*Wilson, S. G. (A.)	Angier	Harnett
*Stephenson, B. E.	Roanoke Rapids	Halifax	*Wilson, W. H. (A.)	Greenville	Pitt
*Stevens, J. B. (A.)	Greensboro	Guilford	*Winston, P. H.	Clarksville, Va.	Granville
*Stewart, D. N., Jr. (N)	Hickory	Catawba	*Wisely, M. R.	Edenton	Chowan
*Stoddard, J. S. (A.)	Cashiers	Jackson	*Wolfe, R. V. (A.)	Winston-Salem	Forsyth
*Straughan, J. W. (A.)	Warsaw	Duplin	*Wood, Frank (A.)	Marion	McDowell
*Strickland, H. G. (N)	Greensboro	Guilford	*Wood, G. T. (A.)	High Point	Guilford
*Stringfield, T., Jr.	Waynesville	Haywood	*Woody, J. W. A. (N)	Tryon	Polk
*Stroupe, A. U., Jr. (A.)	Mount Holly	Gaston	*Wright, J. R. (N)	Raleigh	Wake
*Stutz, M. G.	Southern Pines	Moore	*Wright, R. B., Jr. (A.)	Salisbury	Rowan
*Sullivan, D. J. (A.)	Asheville	Buncombe	*Wyatt, A. T. (A.)	Lillington	Harnett
*Sullivan, J. T.	Asheville	Buncombe	Young, J. A. (A.)	Newton	Catawba
*Sullivan, V. T.	Wilmington	New Hanover			
*Sumner, E. A. (A.)	High Point	Guilford			
Syke, C. L. (A.)					
Sykes, C. H. (A.)	Greensboro	Guilford			
*Sykes, J. V. (A.)	Rocky Mount	Edgecombe			
		Nash			
*Sykes, R. J. (A.)	Raleigh	Wake			
*Tannenbaum, A. J.	Greensboro	Guilford			
*Tart, B. I., Jr. (A.)	Goldsboro	Wayne			
*Tatum, R. C.	Statesville	Iredell			
*Taylor, A. DuV. (A.)	Charlotte	Mecklenburg			
*Taylor, C. W. (A.)	Hollister	Pitt			
*Taylor, R. W. (A.)	Oxford	Granville			
*Taylor, T. J.	Roanoke Rapids	Halifax			
*Teasdale, L. R. (A.)	Charlotte	Mecklenburg			
*Temple, R. H. (A.)	Kinston	Lenoir			
*Thomas, W. C.	Siler City	Chatham			
*Thomas, W. L. (A.)	Durham	Durham			
*Thompson, F. A.	Troy	Montgomery			
*Thompson, W. N. (A.)	Raleigh	Wake			
*Thornhill, E. H. (A.)	Durham	Durham			
*Tice, W. T. (A.)	High Point	Guilford			
*Traywick, J. B. (A.)	Laurinburg	Scotland			
*Troutman, B. S. (A.)	Lenoir	Caldwell			
*Turrentine, K. P. (N)	Kinston	Lenoir			
*Tyndall, R. G. (A.)	Kinston	Lenoir			

THE CRITICAL ANTIMALARIAL PROBLEM AND ITS SOLUTION

It is axiomatic that troops cannot operate successfully in endemic malarial areas without an effective antimalarial drug. Malaria is present throughout most of the tropical and sub-tropical world. The extent of operations in these regions is steadily increasing and it is conceivable that they may grow to tremendous proportions within a short period of time.

Ninety per cent of the world's customary sources of quinine was cut off when the Japanese invaded Java and the Philippines. India has in the past frequently imported cinchona bark from Java to bolster her supply. South America has for many years been importing bark from Java for domestic use.

What measures should be taken to safeguard our limited stocks? Early in May the War Production Board recognized the critical nature of the problem. In order to avail itself of medical advice it asked the National Research Council to form a Committee on Drugs and Medical Supplies to investigate and advise not only on the many problems which the quinine scarcity presented, but also on any other

matters pertaining to Drugs and Medical Supplies which concerned the War Production Board. This committee has two subcommittees, one on Essential Drugs, the other on Hospital and Surgical Supplies. The Committee has also used the advice of other National Research Council Committees, such as the Subcommittee on Tropical Diseases for answers to specific problems in the therapy of malaria, and the Committee on Surgery for technical problems related to surgical supplies.

The program worked out by the joint efforts of the War Production Board and the National Research Council progressed as follows:

1. The War Production Board issued "Quinine Order M-131" which froze present stocks and restricted the use of quinine and other cinchona alkaloids to the treatment of malaria, except that quinine could also be used for the treatment of cardiac disorders. Requests for quinine for the treatment of various other conditions including quinine urethane and quinine urea as local anesthetics, quinine in sodium morrhuate for varicose vein injections, quinine salts for induction of labor, quinine salts in the treatment of night cramps, multiple sclerosis, amyotrophic lateral sclerosis, myotonia atrophica, paralysis agitans and myotonia congenita, have all been carefully considered and denied with the exception of the use of quinine in the treatment of myotonia congenita.
2. Repeated persuasive efforts in the trade press have been instituted by the War Production Board to bring in all unopened packages of quinine, and now the machinery is being set up for bringing in opened packages, analyzing each and pooling according to the type of preparation.
3. To effect the maximum antimalarial value of available cinchona bark from South America, the National Research Council undertook to investigate the feasibility of substituting totaquine for quinine in the treatment of malaria. Totaquine had been recognized previously by the U. S. Pharmacopoeia, and a standard set which appears in the 12th Edition. This standard seemed to allow for too much latitude both in quinine content and in total crystallizable alkaloid content. Accordingly, the National Research Council asked the U. S. Pharmacopoeia to revise the monograph to obtain a more uniform standard. As the result the U. S. Pharmacopoeia adopted the following monograph which will appear in a supplement of the 12th Edition.

"Totaquine is a mixture of alkaloids from the bark of *Cinchona Succirubra* Pavon and other suitable species of *Cinchona*. It contains not less than 7 per cent and not more than 12 per cent of anhydrous quinine, and a total of not less than 70 per cent and not more than 80 per cent of the anhydrous crystallizable cinchona alkaloids, the designation "crystallizable alkaloids" referring to cinchonidine, cinchonine, quinidine, and quinine.

Totaquine of a higher quinine percentage may be reduced to the official quinine standard by a mixture with Totaquine of a lower percentage, or with any of the diluents permitted for powdered extracts under Extracta, page 174, providing the total anhydrous crystallizable cinchona alkaloids do not fall below the required percentage.

The National Research Council recommended the dose to be 10 grains three times a day for 7 days."
4. It was the considered opinion of the Subcommittee on Tropical Diseases, and the Committee on Medicine of the National Research Council, that in this dosage totaquine should prove to be as effective as quinine sulfate in the oral treatment of malaria. A satisfactory price structure has been set up for cinchona bark from South America by the Board of Economic Warfare, and every effort is being made to stimulate importation.
4. The production of atabrine has been stimulated by the War Production Board, and the present outlook on production sufficient to supply all anticipated needs is practically assured. Extensive chemical, pharmacological and clinical investigations have been conducted by various groups of the National Research Council working under grants by the Office of Scientific Research and Development. The chemical studies have adequately demonstrated the chemical purity of the atabrine produced in this country. Pharmacological and clinical investigations have revealed temporary gastrointestinal disturbances in a variable percentage of persons receiving atabrine in the suppressive (prophylactic) treatment of malaria. Further study is under way to elucidate the cause and remove if possible these disturbances. There is a tendency to the development of a yellow pigmentation of the skin during administration which disappears after the drug is stopped. This is harmless and not associated with any disturbance in liver function.
5. Experience with the use of atabrine by the British both therapeutically and as a suppressive, indicates that it is an effective antimalarial and in some ways superior to quinine. It is slower in action, and therefore not as useful in the initial treatment of malaria, but after one to three days of quinine therapy atabrine is exceedingly effective. At a recent meeting of the Subcommittee on Tropical Diseases of the National Research Council, the following program of dosage was endorsed as an efficient routine of therapy:
 - (1) Combined QAP Treatment. (Method of choice.)
 - (a) Totaquine or Quinine sulphate, 0.64 gram (10 grains) three times daily after meals for 2 or 3 days, or until pyrexia is controlled. Then give
 - (b) Atabrine, 0.1 gram (1½ grains) three times daily after meals for 5 days. Then after 2 days without antimalarial medication give
 - (c) Plasmochin, 0.01 gram (3/20 grain) three times daily after meals for 5 days, except for the debilitated patient, who should receive only two doses daily. (Discontinue if toxic symptoms occur. Never give atabrine and plasmochin concurrently.)
 - (2) Atabrine-plasmochin treatment. (May be used for simple vivax infections and in other infections when no totaquine or quinine is available.)
 - (a) Atabrine, as above for 7 days. Then,

PERCENTAGES TO 1942 QUOTA

As of October 31, 1942

State	% to Quota	State	% to Quota	State	% to Quota
Alabama	204	Louisiana	214	North Dakota	114
Arizona	156	Maine	128	Ohio	115
Arkansas	122	Maryland	109	Oklahoma	132
California	81	Massachusetts	78	Oregon	113
Colorado	124	Michigan	126	Pennsylvania	93
Connecticut	76	Minnesota	98	Rhode Island	92
Delaware	152	Mississippi	161	South Carolina	174
Dist. of Columbia	100	Missouri	104	South Dakota	137
Florida	118	Montana	122	Tennessee	166
Georgia	149	Nebraska	91	Texas	147
Idaho	162	Nevada	65	Utah	111
Illinois	82	New Hampshire	85	Vermont	96
Indiana	136	New Jersey	107	Virginia	138
Iowa	116	New Mexico	224	Washington	126
Kansas	114	New York	78	West Virginia	153
Kentucky	168	North Carolina	163	Wisconsin	85
				Wyoming	158

after 2 days without antimalarial medication, give plasmochin, 0.01 gram three times daily for 5 days, as above.

(3) Totaquine or Quinine-plasmochin treatment. (Method when no atabrine is available.)

(a) Totaquine or Quinine sulphate, as above for 7 days, during the last 5 of which accompany each dose of totaquine or quinine with plasmochin, 0.01 gram three times daily.

(4) Suppressive Treatment. (a) Atabrine. Give 0.1 gram (1½ grains) twice daily after meals on two days a week, allowing a 2 or 3 day interval between days of medication.

It was the consensus of this Subcommittee that until we have had more experience with the use of atabrine it should be used only under the guidance of a physician or public health officer.

6. Government stockpiles have been recommended not only for quinine but the other alkaloids, (Cinchonine, cinchonidine and quinidine) and totaquine, and the Defense Supplies Corporation is purchasing against these stockpile recommendations.

It is anticipated on the basis of recent investigations by the Board of Economic Warfare that the barks from South America of low quinine content but sufficiently rich in total crystallizable alkaloids (Quinine, Quinidine, Cinchonine, Cinchonidine) to make totaquine of U. S. P. standards, will be found in sufficient quantity to enable totaquine to replace civilian quinine requirements. The amount of this bark which is available has been an unknown factor, because its low quinine content has not made it previously marketable.

If every physician in civilian practice and every public health officer will follow the recommendations of the Subcommittee on Tropical Diseases regarding the use of atabrine and will use totaquine in place of quinine whenever totaquine is available, an important and material conservation in our limited stocks of quinine will be accomplished.

Lewis H. Weed, M.D.
Chairman, Division of Medical Sciences
National Research Council

BULLETIN BOARD

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The 8,937 babies born in North Carolina in October comprised the largest number ever reported in this state during a single month, it was announced by the Vital Statistics Division of the Board of Health. This figure was 1,906 in excess of the number of births reported in October, 1941, and 2,196 higher than the average number of monthly births during the past five-year period.

In spite of the greatly increased number of births reported last month, an all-time low marked the death rate among babies under a year old—just 37.4 per 1,000 live births, as compared with a rate of 57.1 for the corresponding month last year, according to Dr. G. M. Cooper, who is in charge of the State Board of Health's maternal and child health services and who supervises the State's clinics for mothers and babies.

There was also a decline in the total number of deaths from all causes during the month, which was 2,368, against 2,490 in October, 1941, the monthly rate having dropped from 8.3 to 7.8.

The number of deaths from preventable accidents was 107 last month, compared with 199 the corresponding month last year. Tuberculosis deaths for the month dropped from 139 to 116, while deaths from diarrhea and enteritis among children under 2 years of age totaled 43 last month, against 75 in October, 1941. There were no deaths reported from undulant fever, smallpox, measles, scarlet fever, infantile paralysis, epidemic cerebrospinal meningitis, rabies or tetanus. Only 2 deaths were caused by pellagra, against 5 in October, 1941, and homicides dropped from 39 to 23.

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The 72nd Annual Congress of Correction, sponsored by the American Prison Association, met in Asheville during the week of October 19-24. Representatives came from forty states, the District of Columbia, the Republic of Panama, Canada and England.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The second-year class of the School of Medicine of the University of North Carolina, finishing in March, 1943, will be transferred to the following four-year schools:

Northwestern University—William F. Hutson of Fountain City, Tennessee.

Albert J. Josselson of Ahoskie, N. C.

University of Illinois—Edgar D. Grady, of Wilson, N. C.

Washington University, St. Louis, Missouri—

William A. Kirksey of Fayetteville, N. C.

Albert Stewart of Fayetteville, N. C.

David S. Citron of Charlotte, N. C.

Miss Elaine Schwinge of Tarboro, N. C.

Tulane University—George E. Koury of Burlington, N. C.

Emory University—David A. Rendleman, Jr., of Fort Wayne, Indiana

Johnnie H. Reed, Jr. of Gainesville, Georgia

Bowman Gray School of Medicine of Wake Forest College—John C. Foushee of Sanford, N. C.

University of Virginia—George M. Cooper, Jr. of Raleigh, N. C.

Bennett Creech of Raleigh, N. C.

Carlos J. Ross of Phillips, Maine

Medical College of Virginia—Sydenham B. Alexander of Charlotte, N. C.

George Washington University—J. Harold Cameron of Somers Point, N. J.

Johns Hopkins University—Charles E. Flowers, Jr. of Zebulon, N. C.

University of Maryland—Kenneth W. Wilkins of Mount Olive, N. C.

Isaac C. Wright of Raleigh, N. C.

Ernest G. Guy of Harmony, N. C.

Thomas L. Morrow of Parris Island, S. C.

William B. Ingram of Norwood, N. C.

Leon W. Robertson of Wake Forest, N. C.

Miss Sarah A. Taylor of Charlotte, N. C.

Jefferson School of Medicine—Brice T. Dickson of Gastonia, N. C.

Mahlon J. Pophal of St. Pauls, N. C.

Robert E. Lewis of Lumberton, N. C.

George F. Owen, Jr. of Dunn, N. C.

Robert M. Packer, Jr. of Greenville, S. C.

Daniel R. Shields, Jr. of Gastonia, N. C.

University of Pennsylvania School of Medicine—

George L. Jordan, Jr. of Kinston, N. C.

James B. Greenwood of Charlotte, N. C.

Frank R. Reynolds of Wilmington, N. C.

Cornell University School of Medicine—Charles O. Humphries of Asheville, N. C.

New York University—Alexander C. Mitchell of New York City

W. Neill Hubbard, Jr. of Asheville, N. C.

Harvard—John R. Chambliss of Rocky Mount, N. C.

James R. Collett of Morganton, N. C.

Julian T. Brantley of Greensboro, N. C.

Samuel R. Lambe of Jacksonville, Fla.

* * * *

Dr. W. R. Berryhill, Dean of the Medical School, attended the meeting of the Association of American Medical Colleges in Louisville, Kentucky, October 26-28.

* * * *

Drs. Emanuel Waletzky and H. W. Brown, of the faculty of the School of Public Health, were in Richmond for the meetings of the National Malaria Society November 11 to 13, and gave a paper on "The Mode of Action of Quinine on Avian Malaria".

Dr. Harold W. Brown, Dean of the School of Public Health, went to Boston in October to lecture at the medical schools to the medical students and intern staffs on tropical medicine. Dr. Brown lectured to the medical students and intern staffs of Yale and several of the Philadelphia medical schools on tropical medicine during the week of November 24. This work is done in connection with the War Department under the auspices of the National Research Council.

* * * *

Dr. D. F. Milam attended the meetings of the American Public Health Association at St. Louis, and also the meeting of the Chairmen of State Nutrition Committees which preceded the A.P.H.A. Meeting. Dr. Milam also attended the meetings of the Southern Medical Association in Richmond, Virginia, where he read a paper before the Public Health Section on "Medical Nutritional Survey of 800 N.Y.A. Youths".

* * * *

Dr. William L. Fleming and Dr. John J. Wright, of the Faculty of the School of Public Health, attended a Conference on "Venereal Disease Control Needs in Wartime" in Hot Springs, Arkansas, October 21 to 24. This Conference was called by the U. S. Public Health Service.

* * * *

The War Department has sent a group of nineteen medical army officers to the School of Public Health of the University of North Carolina for the purpose of taking special work in epidemiology and sanitation for eight weeks, beginning October 26, 1942. The purpose of this course is to train the doctors for public health work in army camps and in the field.

* * * *

Miss Margaret Blee and Miss Ruth W. Hay of the Department of Public Health Nursing, School of Public Health, University of North Carolina, attended the American Public Health Association Convention and the Pre-Convention Annual Meeting of the Collegiate Council on Public Health Nursing Education held in St. Louis, Missouri, October 24-30, 1942. Representatives from the thirty-one programs of postgraduate study in public health nursing were present.

Miss Hay presented for discussion a paper on "The Objectives and Frequency of the Faculty Member's Visits to the Agency" at the Collegiate Council on Public Health Nursing Education meeting during the Session of the Division of Responsibility between the University and the Agency for the Students' Education in the Required Field Experience.

Miss Blee presented a paper on "The Nurse's Part in Health Education" at one of the General Sessions of the American Public Health Association Convention.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Lieutenant Commander A. R. Behnke, M.C., of the Navy's Experimental Diving Unit, will deliver three lectures at the Bowman Gray School of Medicine in January. The first will be given on January 12. These lectures are part of the Nathalie Gray Bernard Lecture Series.

The students of the Bowman Gray School of Medicine are publishing a bi-monthly Journal with a circulation of 600 copies. William Alsobrook is Editor and Lawrence Byerly Holt is Business Manager. The Journal is being sent to all the medical school libraries, to two hundred alumni, to about ninety of the larger eastern hospital libraries, and to all members of the medical school faculty. Anyone wishing to receive the magazine, without charge, should write to William L. Wood, Advertising Manager.

The Journal publishes articles dealing with student research and reviews, as well as news notes of interest to physicians.

* * * *

Dr. Tinsley Harrison, Professor of Medicine, has been appointed chairman of the Section on Experimental Medicine and Therapeutics of the American Medical Association and attended the Annual Conference of Section Secretaries with the Council on Scientific Assembly in Chicago on December 4.

* * * *

Dr. George Harrell of the Department of Medicine and Dr. Thomas J. Brooks of the Department of Parasitology will attend the Army Medical College courses in Tropical Medicine given in January. Dr. Harrell will go to Washington and Dr. Brooks to Tulane University.

* * * *

Dr. Arthur Grollman, Dr. Robert McMillan, Dr. George Harrell, and Dr. John Williams took part in a symposium on cardiovascular diseases given before the Seaboard Medical Association meeting in Wilson on December 3.

* * * *

Dr. Wingate M. Johnson, Professor of Clinical Medicine, attended the semi-annual meeting of the trustees of the National Physicians' Committee in Chicago on November 18 and the Annual Conference of Secretaries of State Medical Societies and Editors of State Medical Journals on November 20 and 21.

SEVENTH DISTRICT MEDICAL SOCIETY

The Seventh District Medical Society met in Monroe on November 18, at the Monroe Country Club. The following program was presented at the afternoon session:

A Hobby for the Doctor—

Dr. C. A. Bolt, Marshville
Some Indications For the Surgical Sterilization of Women Dr. Chas. I. Allen, Wadesboro

The Typhus Fever Problem in Charlotte—

Drs. James M. Alexander and Thomas W. Baker, Charlotte

The Treatment of War Wounds Among Civilian Population as Well as Military—

Lt. Col. Fred W. T. Overton, Camp Sutton, Monroe

Management of Diabetes Mellitus—

Dr. L. A. Crowell, Jr., Lincolnton
Clinical-Pathological Conference—

Dr. Paul Kimmelsteil, Charlotte

At the annual banquet, held at 7 p. m., Dr. Donnell Cobb, President, and Dr. Roscoe McMillan, Secretary, brought greetings from the State Society, and Dr. Tinsley R. Harrison of the Bowman Gray School of Medicine gave the scientific address. His subject was "The Interpretation of Pain in the Chest".

Officers of the society are Dr. L. N. Glenn, Gastonia, President; Dr. K. E. Neese, Monroe, Vice-President; Dr. H. C. Thompson, Shelby, Secretary. Dr. R. H. Crawford of Rutherfordton is Councilor for the Seventh District.

BUNCOMBE COUNTY MEDICAL SOCIETY

The November meeting of the Buncombe County Medical Society, held on November 16, was devoted to the class in chemical warfare given by the Office of Civilian Defense for the Tenth District. Dr. James P. Hendrix of Duke University conducted the course.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society held a dinner meeting on November 17. Dr. John Rose of the Bowman Gray School of Medicine spoke on "Psychiatric Problems in the Armed Forces".

NEWS NOTES

Dr. J. H. Worley of Asheville has been appointed Assistant Medical Director and Chief Surgeon to the Holston Army Ordnance Works at Kingsport, Tennessee. He assumed his duties there on October 12.

* * * *

Dr. Forrest Bliss of Asheville, who volunteered for civilian defense duties, has been assigned to a large industrial center in eastern North Carolina.

* * * *

After completing postgraduate courses at the Medical College of Virginia and Duke University, Dr. Paul Whitaker will resume a limited practice in Kinston on January 1, 1943.

The following doctors from North Carolina took part in the program of the Thirty-Sixth Annual Meeting of the Southern Medical Association, held in Richmond November 10-12:

Dr. R. A. Moore, Winston-Salem; Dr. Hugh A. Thompson, Raleigh; Lt. Col. Worth B. Daniels, M.C. and Captain H. Arthur Grennan, M.C., Fort Bragg; Dr. Julian M. Ruffin, Durham; Dr. Robert L. McMillan, Winston-Salem; Dr. Tinsley R. Harrison, Winston-Salem; Dr. Wm. Nicholson, Durham; Dr. K. S. Grimson, Durham; Drs. Barnes Woodhall and Hans Lowenhach, Durham; Dr. Arthur London, Jr., Durham; Dr. Jasper S. Hunt, Charlotte; Dr. Jay M. Arena, Durham; Drs. Grace P. Kerby, Ivan W. Brown, Jr., George Margolis, and Wiley D. Forbus, Durham; Dr. David T. Smith, Durham; Dr. Lenox D. Baker, Durham; Drs. Frank R. Lock, Nelson M. Webster, and Richard C. Forman, Winston-Salem; Dr. Bayard Carter, Durham; Dr. John E. Dees, Durham; Dr. W. M. Coppridge, Durham; Dr. Hamilton W. McKay, Charlotte; Dr. J. C. Knox, Raleigh; Captain I. H. Manning, Jr., M.C., Fort Bragg; and Dr. D. F. Milam, Chapel Hill.

Major Frank E. Wilson, M.C., Williamston, and Drs. Paul V. Joliet, J. A. Winstead, and T. F. Vestal of the North Carolina State Board of Health spoke at the meeting of the American Public Health Association, held conjointly with the meeting of the Southern Medical Association.

FIFTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The fifth Annual Congress on Industrial Health, sponsored by the Council on Industrial Health of the American Medical Association, will be held Monday, Tuesday and Wednesday, Jan. 11-13, 1943, at the Palmer House in Chicago. These meetings are open to physicians and others interested in industrial health. There is no registration fee.

ANNUAL SESSION OF THE AMERICAN COLLEGE OF PHYSICIANS CANCELLED

The Board of Regents of the American College of Physicians has announced the cancellation of their 1943 Annual Session, which was scheduled to be held in Philadelphia, April 13-16, 1943. This action was taken after thoughtful consideration of all factors involved, including an intimation from the Secretary of War and the Office of Transportation that larger national medical groups should not plan meetings at the time set; a growing difficulty in getting speakers and clinicians of top rank to maintain the usual standards of the program; prospect of greatly reduced attendance, because civilian doctors are faced with too great a burden of teaching and practice already; a decreasing active membership, due to approximately 25 per cent of all doctors being called to active military service. President James E. Paullin announced, however, that all other activities of the College would be pursued with even greater zeal, and that the College would especially promote regional meetings over the country and organize postgraduate seminars in the various military hospitals for doctors in the armed forces.

THE FIFTH ANNUAL FORUM ON ALLERGY

This international post-graduate society will meet in the Hotel Statler in Cleveland, Ohio, the week end of January 9 and 10, 1943. This Forum will offer in most intensive presentation both the new and the old in allergy. Not only will specialists in this new field of Internal Medicine gather, but also those whose interests are in allied fields of medicine will be welcome, for in war time every physician is called upon to advise and treat allergic patients. A course in immunology as it applies to allergy will be given the week before by Dr. Eckers to a limited number of physicians and associates. Any physician interested in either or both of the foregoing is invited to write Dr. Jonathan Forman, 956 Bryden Road, Columbus, Ohio, for copies of the printed program and registration blanks.

Among the fifty-eight allergists participating in the program are most of the leaders in this field. Arthur Coca, M.D., of New York will receive the Forum's Gold Medal and will give the annual Forum lecture on Sunday afternoon.

Urology Award

The American Urological Association offers an annual award 'not to exceed \$500' for an essay (or essays) on the result of some specific clinical or laboratory research in Urology. The amount of the prize is based on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years.

The selected essay (or essays) will appear on the program of the forthcoming meeting of the American Urological Association, May 31-June 3, 1943, Hotel Jefferson, St. Louis, Missouri.

Essays must be in the hands of the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee, on or before March 1, 1943.

AUXILIARY

A MESSAGE FROM THE ORGANIZING PRESIDENT

Dear Friends:

There has never been a time when doctors' wives have the opportunity for service that they have today. Here are just a few suggestions—which are responsibilities as well:

Help organize First Aid, Nutrition, Home Nursing and Nurses' Aide classes.

Urge the planting of year-round gardens and the conservation of all foods possible.

Urge Parent-Teacher Associations to have more thorough examinations and remedial measures called for.

Talk good health as never before.

Offer your services to your Health Officer and Welfare Officer.

Help soldiers' families whenever possible.

Get people vitamin-conscious.

Be very considerate of the families of doctors who have gone into the service—especially during the Yuletide. See that every doctor from your county in the service is remembered at least by a card.

Be on the alert to keep medicine on the high level it now maintains. Many "quacks" will try to wedge in now that so many doctors are away.

You are leaders in your community. Now is the time to exercise the influence you have to help uphold the high traditions and ideals of the profession so dear to us, and at the same time to make a great contribution to the war effort. Special greetings to you whose husbands or sons are in the service and also to the others who are helping their husbands hold down the home front, where it is necessary that a good job be done if the war effort is to succeed. More homes will have vacant places this Christmas than ever in the history of our great country. Do your part to bring cheer—especially in doctors' families.

My special greetings to each of you.

Sadie L. McCain
(Mrs. P. P. McCain)
* * * *

SOUTHERN MEDICAL AUXILIARY

The Southern Medical Association Auxiliary held its annual meeting in Richmond on November 10-12. Among those attending from North Carolina were: Mrs. James W. Vernon, Morganton; Mrs. S. B. McPheeters, Goldsboro, President of the Wayne County

Medical Auxiliary; Mrs. D. M. Royal, Salem-burg, Councilor for the Third District; Mrs. J. V. Gooding, Kenansville, President of the Duplin County Auxiliary; Mrs. W. M. Coppridge, Durham; and Mrs. Sidney Smith, Raleigh, First Vice-President of the State Auxiliary.

Those attending were privileged to hear an address by the National Auxiliary President, Mrs. Frank N. Haggard of Texas, and one by Dr. W. W. Bauer, Director of the Bureau of Health Education of the American Medical Association.

Aside from the educational aspect of the meeting a very delightful and varied social program was planned for those attending. One of the loveliest social functions was the tea given by Mrs. Darden, wife of the Governor of Virginia, at the Governor's Mansion. Mrs. Darden was assisted in serving by the wives of the Richmond doctors. Another delightful affair was the Auxiliary luncheon at the Jefferson Hotel.

The president of the Southern Medical Association Auxiliary is Mrs. J. Ullman Reaves, of Mobile, Alabama.

The Journal of the American Medical Association, issue of November 14, 1942, carries the following "Current Comment" on Atabrine:

AMERICAN ATABRINE

The most prevalent disease afflicting the populations of the world is undoubtedly malaria. How many cases occur each year is not known, but estimates place the number as high as 800,000,000. In local areas, particularly in the United States and Panama, drainage and sanitary engineering projects have had some influence on the incidence of malaria, but such measures cannot cope with the disease on a worldwide basis. Until 1932 the populations of the world were principally dependent on quinine and its derivatives for protection against the malady. With the discovery of Atabrine in 1932 a new and potent addition to the antimalarial armamentarium made its appearance. When the Netherlands East Indies fell to Japan, the source of practically the entire world supply of quinine was lost to the United Nations. Atabrine, now officially recognized under the nonproprietary name quinaerine, assumed a role of unsurpassed importance as a strategic drug. Although it was originally prepared in this country from imported intermediates, in 1941 American chemists solved the problem of synthesizing the drug through intricate steps. The question has been raised whether the American Atabrine is identical in all respects with the German drug. This question was studied as a war project by the Division of Chemistry and Chemical Technology of the National Research Council. Extensive chemical, pharmacologic and clinical investigations were made in leading institutions throughout the country. The report released by the National Research Council establishes the fact that there is no longer reason to doubt that the drug manufactured in this country is genuine, comparable in every respect with that produced in other countries.

BOOK REVIEWS

Arthritis and Allied Conditions. By Bernard I. Comroe, M.D., F.A.C.P., Instructor in Medicine, University of Pennsylvania; Senior Ward Physician, Hospital of the University of Pennsylvania. Second edition. 878 pages, illustrated with 242 engravings. Price, \$9.00. Philadelphia: Lea and Febiger, 1941.

An effort has been made to summarize in this book the essential information concerning the diagnosis and treatment of the various forms of arthritis. The book is written primarily for the general practitioner. It has numerous tabulated summaries that enable one to pick out the essential facts without reading the whole text. Methods of physiotherapy which can easily be applied in the home are outlined. Since physiotherapy is probably the most important of all the therapeutic aids in the treatment of arthritis, and since the knowledge of its use is not widely disseminated, this is a very valuable feature of the book.

In addition to the section on arthritis there are chapters on painful shoulders, painful feet, backache, and the use of the sulfonamides. There are two criticisms which this reviewer has to offer: First, the physiological and pathological discussions are quite limited, and secondly, too many controversial and unproven methods of therapy are discussed for a book of this type, even though the author clearly evaluates these forms of therapy. On the whole, however, this is an excellent volume for anyone interested in this important subject.

Urological Diseases of Pregnancy. By E. Granville Crabtree, M.D., Urologist to the Boston Lying-in Hospital. With a chapter on Toxemia of Pregnancy by George C. Prather, M.D., Assistant Urologist to the Boston Lying-in Hospital. 472 pages with 158 illustrations. Price, \$6.50. Boston: Little, Brown and Company, 1942.

This work represents a complete review of the world literature on urological diseases complicating pregnancy. It is written in a clear and concise manner with frequent references to the enormous bibliography, which includes every significant publication in this field. Particular emphasis is placed upon the more common complications of pregnancy. Pyelonephritis and pyelitis of the prenatal and postpartum period are considered in detail. The significant ureteral changes associated with pregnancy are clearly illustrated by pyelograms and schematic drawings for their interpretation. Dr. Prather's chapter on toxemia of pregnancy is excellent, and he has given particular attention to the sequelae of hypertension and albuminuria in pregnancy. The renal aspects have been emphasized, and where possible, urological cooperation as an aid toward the correct diagnosis has been mentioned.

All of the rare urological complications of pregnancy are considered, and a chapter is devoted to the renal contraindications of pregnancy, to bilateral cortical necrosis, to renal insufficiency after blood transfusions, to the lone kidney of pregnancy, and to other urological conditions.

This book is an excellent reference, and one which should be readily available for every obstetrician and urologist.

Clinical Anesthesia. By John S. Lundy, B.A., M.D., Head of Section on Anesthesia, Mayo Clinic; Professor of Anesthesia, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota; Diplomate and Member of the American Board of Anesthesiology, Inc.; Member of the Subcommittee on Anesthesia, National Research Council. 771 pages with 266 illustrations. Price, \$9.00. Philadelphia and London: W. B. Saunders Company, 1942.

In this volume on *Clinical Anesthesia* theories have been to a great extent eliminated, and the practical side of the subject is presented. The book is excellently written and well illustrated. The illustrations on regional anesthesia are exceptionally good. This book is complete in every detail, discussing anesthetic agents, their choice in operative procedures, and the technique of administration. Local, regional, spinal, inhalation, and intravenous anesthesia is fully covered. Preoperative and postoperative care and medication are described.

This is an excellent volume and should be in the hands of every anesthetist and student of anesthesia.

War Medicine: A Symposium. Edited by Winfield Scott Pugh, M.D., Commander (M.C.), U.S.N., Retired. 565 pages. Price, \$7.50. New York: Philosophical Library, 1942

This volume is composed of fifty-seven separate articles covering the field of military medicine and divided into three general groups of surgery, aviation and naval medicine, and general medicine. Many of these articles have previously appeared in print and many have obviously been written especially for this volume. Some of the individual articles are excellent. Other articles appear to be mere reminiscences and abstractions of interesting cases of the author's experience in the last war. The volume suffers greatly from poor editing. For example, the use of tetanus antitoxin is recommended in several articles. The dose recommended for similar wounds varies from 750 to 3,000 units, and the editor and authors apparently are oblivious of the fact that all military personnel in the armed services at present are immunized with tetanus toxoid and should receive a booster dose of tetanus toxoid rather than antitetanic serum. The article on the treatment of war burns does not mention the use of the sulfonamides. The volume is in no sense a book to be carried into the field for ready reference.

Babies Are Fun. By Jean Littlejohn Aanberg. 128 pages. Price, \$1.00. New York: William Penn Publishing Corporation, 1942.

Among the various books written for the expectant mother, *Babies Are Fun* stands out as being definitely different. The problems of having a baby and taking care of him during his infancy are treated in a light and humorous way. The book is full of good, common sense. This humorous approach to the subject has much to recommend it, for many of the young mothers are so burdened down with strict rules accompanied by prophecies of doom if these rules are broken that all the fun of having and caring for a baby is removed. The practical programs discussed in this small book fit well with the modern conception of training infants. The reviewer feels that this book can be very highly recommended for the expectant mother. It should make a particularly suitable book as a gift to the lay person.

The Surgery of Pancreatic Tumors. By Alexander Brunswick, M.S., M.D., F.A.C.S., Professor of Surgery, University of Chicago. Price, \$7.50. 421 pages, with 123 illustrations. St. Louis: The C. V. Mosby Co., 1942.

Although surgery of the pancreas has been a subject of interest and discussion for many years, it is only in the last decade that any degree of success has been attained in the surgical attack on tumors of this organ. Dr. Brunswick, one of the leaders in this field, has reviewed the subject in great detail and describes both clinical and surgical aspects of all phases of pancreatic tumors. The book is excellently written and illustrated by 123 well-chosen illustrations. In view of the frequency with which tumors of the pancreas occur, every effort should be made by the clinician to diagnose the condition early. The surgeon in turn should be equipped to handle these lesions according to the most recently developed techniques. Both groups will profit and be helped in attaining this goal by a careful study of the volume under review.

Recent Advances in Medicine. By G. E. Beaumont, M.A., M.D., F.R.C.P., D.P.H., Physician to the Middlesex Hospital and Lecturer in Medicine, Middlesex Hospital Medical School, London; and E. C. Dodds, M.V.O., D.Sc., Ph.D., M.D., F.R.C.P., Professor of Biochemistry in the University of London and Pathologist to the Royal National Orthopedic Hospital. Tenth edition. Price, \$5.50. 440 pages with 45 illustrations. Philadelphia: The Blakiston Co., 1942.

Advances in medicine proceed with such rapidity that only those actually engaged in research can succeed in keeping abreast of developments in a single field of endeavor. The mass of scientific literature in which the details of medical progress are meticulously accumulated must be summarized and clarified before it can become available to the general practitioner. In the present edition of *Recent Advances in Medicine*, the tenth in the series which began in 1930, are collected and analyzed most of the important advances of recent years. It covers in a relatively brief volume many subjects of interest, including the sulfonamide drugs, the vitamins, the kidneys, diabetes, hepatic function, Addison's disease, the sex hormones, and the anemias. Special attention is given to new diagnostic procedures such as electroencephalography, sternal puncture, urea clearance, and hepatic function tests. The general practitioner will profit by a careful perusal of this volume, which will bring to his attention numerous facts of practical importance brought out by recent research in medicine.

Adventures in Public Health Integration. The 1941 Health Education Conference of the New York Academy of Medicine. 56 pages. Price, \$1.00. New York: Columbia University Press, 1942.

In this volume are reprinted three addresses on the subject of health education. These are of primary interest to workers in the field of public health and academic medicine, but the emphasis which is placed upon the importance of the individual himself in maintaining his health and upon the need for bringing a private physician into the field of health education make them of some interest to practitioners.

Sulfanilamide and Related Compounds in General Practice. By Wesley W. Spink, M.D., Associate Professor of Medicine, University of Minnesota Medical School. Second edition. 374 pages. Price, \$3.00. Chicago: The Year Book Publishers, Inc., 1942.

This small volume is admirably suited to its purpose. The author has exhaustively reviewed the literature and has included a complete bibliography. After discussing adequately the physical properties of the compounds, the principles of therapy, and the theories of the mechanism of action, he discusses the use of the various compounds in specific infections. The newer sulfonamide compounds, such as succinylsulfathiazole and sulfacetimide, are included. The author has very wisely stressed the fact that these compounds are not cure-alls but are adjuncts to other time-tested principles of the treatment of infectious diseases. He soundly advocates employing the principles of surgical drainage and the use of antitoxins and serum. He notes his omission of other chemical agents still in the experimental stage, such as gramicidin and penicillin. If thoughtfully read and constantly referred to, there is no doubt that this volume will aid tremendously all practitioners of medicine to a more efficient and effective use of the sulfonamide compounds.

Military Surgical Manuals Volume III—Abdominal and Genito-Urinary Injuries: Prepared under the Auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Price, \$3.00. 243 pages with 79 illustrations. Philadelphia and London: W. B. Saunders Company, 1942.

This is the third in a series of military surgical manuals sponsored by the United States Army. This particular volume is divided into two sections: (1) abdominal injuries, and (2) genito-urinary injuries.

The first section discusses in great detail the various abdominal wounds of modern warfare and the handling of these wounds under conditions of battle. The treatment of shock and hemorrhage is discussed and the laboratory studies and clinical examinations which can be made at the front and in secondary hospitals are described. Brief chapters are devoted to the selection of patients for operation and to the essentials of anesthesia. The different types of operative procedures in abdominal injuries are discussed in great detail and post-operative treatment, including that of such conditions as shock, dehydration, avitaminosis, thrombosis, and embolism, is given adequate consideration.

The second section of the volume, which is devoted to genito-urinary injuries, evidently is intended primarily for the general surgeon who has not had very extensive experience with this type of surgery. Operative procedures are described precisely and in much detail.

This volume is well written, well prepared, and contains a wealth of up-to-the-minute information on the treatment of abdominal and genito-urinary injuries.

The Pleuro-Subpleural Zone. Its Clinical and Experimental Investigation and its Practical Importance in Chest Pathology. By J. Skla'dal, Reader in General and Experimental Pathology, Caroline University, Prague; Head of the Chest Department, Bulovka Hospital, of the City of Prague. Price, \$2.75. 103 pages. Cambridge: at the University Press; New York: The Macmillan Company, 1942.

It is rarely that the time-honored methods of auscultation are applied to new methods of diagnosis. In this little monograph printed in Britain, Dr. Skla'dal, a refugee from Czechoslovakia, describes a new method of diagnosis in chest diseases. The author describes his experiments demonstrating that latent and pre-clinical phases of many pulmonary disorders are localized in the cortical portions of the lung (the pleuro-subpleural zone). These may be detected by auscultation after a sudden expiration. The book should be read by all interested in the physical diagnosis of chest diseases.

The Time of My Life. A Frontier Doctor in Alaska. By Harry Carlos de Vigne, M.D. 336 pages. Price, \$3.00. New York: J. B. Lippincott Co., 1942.

The widespread and increasingly intelligent curiosity of the public in regard to medicine and its practitioners has been very liberally rewarded within the past few years by a veritable deluge of books by and about physicians. These books have been of very uneven quality when regarded as literary productions, but all have been interesting; for the study of mankind is still of paramount interest to man. Now comes a story of a doctor's life and work which combines science with melodrama, told in a style of writing that is thoroughly delightful to read.

Dr. Harry Carlos de Vigne was a Cuban of French and Spanish ancestry, orphaned and deserted in New York City at the age of eight. One of Charles Dickens' famous characters, old Mr. Weller, father of the immortal Sam Weller of the *Pickwick Papers*, attributed the unquestionable smartness of his son to the fact that he had received his education entirely in the streets of London. Whether Dr. de Vigne's obviously superior intelligence was nurtured and developed in this same type of school may be questioned, but one can hardly read his story of vagabondage without a feeling that this rough school of experience, which he followed until the age of twenty, prepared him for his subsequent arduous and adventurous life as a general practitioner in the pioneer days of Alaska. The story of his medical contacts before he eventually entered medical school, and the graphic description of his life as a medical student and young doctor provide entertainment of a high order.

Through it all, from vagabondage to Health Commissioner of Alaska, one traces the development of a man of superior native intelligence. His comments on the education and ethics of a physician are so full of wisdom that one is tempted greatly to quote them.

Here, then, is a book that the physician can read with as much interest as profit, one that he will want to loan immediately to his friends.

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